

A COMPARATIVE ANALYSIS OF THE EFFECTIVENESS OF THREE DIFFERENT
GED PREPARATION PROGRAMS

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The purpose of this study was to identify effective instructional programs for GED tests preparation for students in a large suburban school district. Three different nonrandom, unequal naturally occurring instructional groups at three different locations were examined. One group participated in a traditional instruction program, a second group in a test/retest program, and a third group in a computer-assisted program. The demographics of the district population, the GED population, and the individual study groups were catalogued and analyzed. The demographics of the GED population were similar to the district population but different from the GED passers. Student characteristics did affect GED success.

Both quantitative and qualitative data were gathered. Random students in each of the three groups were interviewed about their experiences in GED preparation using a questionnaire. Quantitative data were analyzed using frequencies, means, correlations, and a multiple regression analysis.

Since the GED credential is an alternative to the high school diploma, its use as a dropout alternative is important to every school district. The study found that instructional methods had little impact on students' success in receiving the GED credential. The overall success rate of students was low in each group. The student's reading achievement score, GPA, and IQ score were predictors of GED tests success.

Little research has been done in the area of GED instruction; perhaps this lack of work is due to the known limited effectiveness of GED preparation. Districts hoping to build effective GED programs should screen students prior to admission to a GED program. High school GED instruction seems to be effective for students likely to be successful in the regular school setting but in need of an immediate credential because of pregnancy or parenting or the need to work full-time or the desire to begin college study. Districts should also design programs to help disenfranchised students in the regular program remain in school.

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CHAPTER 1:

DESCRIPTION OF THE PROBLEM AND THE APPROACH

Introduction

Since research shows that students with diplomas or alternate credentials are more successful financially during their lifetimes than those who do not complete high school, it should be the goal of every school program to eliminate high school dropouts. Current census figures will show that there are nearly 50 million Americans with no high school credential (dropouts). Studies completed by the American Council on Education GED (General Education Development) Testing Service indicate that the GED tests measure skills similar to those of graduating high school seniors; the GED tests are both reliable and valid measures of high school knowledge. Currently one out of seven graduation credentials awarded is obtained through GED testing. Research indicates that students who obtain a GED certificate perform about equally well with those who receive a high school diploma both at the junior college level and in the workplace. Thus, the GED tests offer an obtainable alternative to high school graduation.

Current ACE (American Council on Education) statistics indicate that over 80 percent of GED tests takers prepare in some way for the tests. The purpose of this study was to identify effective methods of preparation for the GED Tests currently used in classes offered in the Garland Independent School District (GISD) were equally effective.

If the instructional methods are equally effective in preparing students to pass the GED tests, methods which are easier to deliver, or more engaging for students, or more cost effective should be considered for wider use.

There were three different methods of GED preparation used in GISD classes. The traditional method was used in the regular high school and involved using commercially prepared practice booklets and practice tests. A second preparation method was used in the evening high school using GEDTS (General Education Development Testing Service) practice tests in a test / retest format. The third method used a specific computer program offered by NovaNET, Inc. and practice tests delivered and scored by the computer. This study sought to show that there was no significant difference in the passing rate of students in the different instructional groups. The study also further reported the demographics of the students in the groups.

Currently, there is very limited research directed at the effectiveness of GED instructional methods used in student preparation programs. Finding that methods of preparation are equally effective suggested that the type of preparation used by students was not a significant variable in determining testing success. Thus, successful completion of the GED tests may be more closely aligned to students' characteristics or previous high school experience than to the amount or type of preparation employed.

The objectives of the study were as follows:

- Determine if GED preparation and testing help reduce the dropout rate in GISD
- Determine the demographic data of GISD GED students
- Determine which characteristics best predict GED tests success

- Determine if computer based instruction is more engaging and enjoyable for students by comparing attendance rates and withdrawal rates and interviewing students
- Show that computer based GED instruction can adequately prepare students to pass the GED tests.

The Problem

One approach to the current problem of adult dropouts (nearly 50 million) is an increase in issuing GED credentials. The problem of this dissertation was to identify the most effective method of delivering GED preparation to current high school students in the Garland Independent School District.

Purpose

The purpose of the study was to identify effective ways to deliver GED instruction. Although cost and convenience affect the instructional method chosen, the most effective method identified by this study was defined as the one that produced the highest passing rate. Identifying characteristics of successful candidates will help to counsel potential GED students in making educational decisions as they consider enrolling in a GED program. Comparing different curricula can help determine if a specific preparation plan promotes passing. Since little research exists in the area of GED preparation, this study may help determine if further study is needed to find effective curricula or if, indeed, preparation programs were equally effective and other factors were more important in determining success.

Background and Significance

History of the General Educational Development Tests

The idea and necessity of the General Educational Development Tests began during World War II. In 1942 a special committee was created to recommend a process through which soldiers who had not completed high school could be accredited for their education by taking an appraisal test. The initial test battery covered the areas of English grammar, social studies, natural sciences, literature, and mathematics. By passing the tests, military personnel and veterans were able to demonstrate a high school level achievement without completing formal high school instruction (Auchter, et al., 1993, p. 2).

New versions of the tests were introduced in 1978 and were based on work done by high school curriculum specialists. The Interpretation of Literary Materials Test was changed to a Reading Skills Test. The Science and Social Studies Tests were altered to include more “concept” items and a reduced reading load (Auchter, et al., 1993, p. 2). These tests also introduced more life-like contexts and reading material likely to be encountered in an adult’s daily life.

The tests currently serve 800,000 adult learners annually; one in seven high school credentials awarded in the U.S. each year is a GED equivalency credential. Over 12 million people have earned GED credentials since its first administration (Allen & Jones, 1992, p. i).

The GED Tests are again scheduled for revision in 2002. The purpose of the tests has not changed and the administration of the tests is not expected to change. “The new tests will continue to reflect the major and lasting outcomes of a four-year high school program of study in the core academic disciplines . . . with an increased emphasis on

workplace and higher education needs” (ACE, 1998,
<http://www.acenet.edu/programs/CALEC/GED/GED2000.html>).

Design of the GED Tests

The GED Tests assess the examinees’ knowledge of broad concepts and problem-solving ability. They do not measure isolated learning fragments, but rather, integrated skills (Baldwin, 1992, p. 2). Examinees use, rather than recite, knowledge and information. Examinees are required to “use some knowledge that they have acquired or some information that is provided in the reading material that accompanies the item” (Auchter, et al., 1993, p. 11). The GED Tests questions are designed to include all the cognitive skills of Bloom’s Taxonomy (ACE, 1998,
<http://www.acenet.edu/calec/ged/spec-A.html>). Those objectives include comprehension, application, analysis, synthesis, and evaluation.

The norming of the GED Tests is designed to show that GED graduates have comparable knowledge to graduating high school seniors. In general, the performance of GED graduates equals that of high school seniors. “College admissions officers and registrars should recognize that, on average, the academic skills of GED graduates are comparable to those of seniors” (Baldwin, 1992, p.1). The norm group is formed through a two-stage stratified random sampling process. Schools are grouped by geographic location and socioeconomic status. Within schools, students who are expected to graduate by fall and who do not require a special edition of the Tests are randomly sampled.

To report scores to examinees, the number of items correctly answered are converted to standard scores and percentile ranks (Malizio & Whitney, 1982, p. 3). “The

percentile rank of a standard score indicates the percent of persons in a particular sample scoring at or below that standard score” (Malizio & Whitney, 1982, p. 4). A standard score scale ranging from 20 to 80 with a mean of 50 and standard deviation of 10 was constructed for each of the five tests. While there is a minimum lowest score (40) allowed by the testing service, the minimum score and diploma requirements for each state, province, or territory are established by that entity (Auchter, et al., 1993, p. 7). Current test-takers in Texas are required to score a minimum of 40 on each part of the test and to have a cumulative score of at least 225 (an average of 45 on each part).

Test Reliability and Validity

“The reliability of the multiple-choice portions of the GED Tests is evaluated by calculating estimates of the internal consistency reliability, the standard error of measurement, and the parallel forms reliability of the tests” (Auchter, et al., 1993, p. 231). The Kuder-Richardson 20 reliability coefficient is used to make estimates of the internal consistency reliability of the GED Tests. The Standard Error of Measurement (SEM) is used to compare the five subject tests. The parallel forms reliability is measured by comparing scores on half-size practice tests with official GED tests.

Test specifications and the test development plans were analyzed for evidence of content validity (Auchter, et al., 1993, p. 48). The content validity of the GED Tests is based on the extent to which its questions reflect the outcomes of a high school education. “Content validation usually rests on subjective analyses of test content made by subject-matter experts. . . . To ensure adequate content representation of the GED test, nationally representative groups of experts were used to develop the current test

specifications, and are used currently to evaluate each operational GED test form” (Auchter, et al., 1993, p. 48).

The construct-related validity of the GED tests was measured by checking the years of high school instruction of GED candidates compared to their performance in subject areas. Generally, the number of years of high school instruction increased the average standard score of candidates (Auchter, et al., 1993, p. 56).

GED graduates show comparable performance with high school seniors on the job. “In a survey of 101 Florida employers, Grise and Klein (1987) found that 57% of the respondents felt that GED graduates performed as well as high school graduates, 12% felt that GED graduates did not perform as well, and 4% thought GED graduates performed better” (Auchter, et al., 1993, p. 60). GED graduates also show a higher employment rate and higher rate of pay than nongraduates do. In one study of the three groups, high school graduates had the highest rate of employment (78 percent) and wages, followed by GED graduates (64 percent employment rate) and second highest wages, and, lastly, dropouts (those with neither credential) who had the lowest employment rate (56 percent) and wage rate (Auchter, et al., 1993, p. 61).

Profile of GED Students

In 1998, 822,000 adults took the GED Tests at 3,718 testing centers. More than 510,000 of that group passed and received credentials (GEDTS, 1999, p. 9). GEDTS produced annual reports profiling GED test-takers from 1958 to the present (GEDTS, 1999, p. 4). In 1998, “the GED Special Projects unit began producing Who Took the GED? The GED 1998 Statistical Report, and GEDTS updated its computer programs to

generate the statistical tables “ (p.4). The GED Annual Statistical Report gives tabulations of the numbers and percentages of all persons who took and passed the GED Tests in a calendar year (GEDTS, 1999, p. 4).

GED candidates tend to be young. The 1980 survey reported that 78 percent of those who earned credentials were under age 29. At that time, as many as 50 percent of candidates were age 21 or younger. In information gathered in the 1989 survey, 62 percent of GED candidates were 25 years or younger and 29 percent were ages 18 or 19. As noted in the 1989 report, census figures showed that 39 million people, age 25 or older, did not have high school diplomas. Only an estimated one percent of those 39 million took the GED Tests in 1989. That number was larger in younger groups, “about nine percent of the 4.3 million people ages 16 to 24 years without high school diplomas and not enrolled in school took the GED Tests” (Swartz, et al., 1985, no. 7, p. 2).

The 1989 survey also reported that a higher number (81percent) of older candidates (aged 45 to 54) worked full time compared to only 53 percent of those under age 17 (Baldwin, 1991, no. 2, p. 4).

Among 1980 candidates, 79 percent were white, 18 percent were black, and 3 percent were members of other races. About 25 percent of candidates’ aged 17 and younger (26 percent) were minorities in 1980. The proportion of candidates aged 18 to 44 who were members of a minority group increased to 31 percent. Currently, the number of minority candidates is increasing. In the 1989 survey, race seemed to make a difference in the number of school grades completed. Fewer White candidates (68 percent) than

Asian / Pacific Islanders (87 percent) or Blacks (79 percent) completed tenth grade or higher (Baldwin, 1991, no. 2, p. 4).

The 1989 survey collected information on characteristics of candidates by gender. The majority of those testing in 1980 were female (58 percent). The 1989 survey revealed that 56 percent of the candidates were women—compared to 52 percent of the general population (Hayes & Baldwin, 1993, p. 2). The majority of women were employed or seeking employment. Among the group of women ages 25 to 34, about half were unmarried and 32 percent were in a household with three or more children. The main reason these women had left high school (40 percent) was pregnancy or marriage. Among them the largest percent were the heads of the household.

Most men ages 18 to 19 (the earlier identified largest group) were unmarried and lived in households without children. The majority of those men were employed or actively seeking employment; very few received any welfare. Among the men, 32 percent said that they had left high school because they had become disengaged from school.

The majority, 93 percent of the 1980 test-takers, of GED candidates were born in the U.S. About an equal number or 92 percent of those who took the GED Tests in 1980 said that they spoke English between the ages of six and thirteen. The majority of GED candidates are also in lower income brackets. Lower earnings are particularly true for groups of women and minority races. The majority of GED candidates had completed tenth grade when they took the Tests.

Most GED candidates had completed at least one year of high school. The 1980 survey reported 88 percent of candidates completed ninth grade, 70 percent tenth grade,

and 37 percent eleventh grade or higher. The 1998 statistical report indicates that again about 67.1 percent of GED candidates reported completing tenth grade or higher and 37.4 percent completed eleventh grade or higher (GEDTS, 1999, p 7).

The majority of those polled in the 1980 survey reported having grades of “B” or “C.” Graduating seniors reported higher grades than GED examinees in the 1980 survey (Malizio & Whitney, 1982, p. 3). According to the 1989 survey, “Asian candidates (84 percent), Black candidates (82 percent), and Hispanic candidates (78 percent) were more likely than White candidates (72 percent) to report in-school grades of ‘mostly C’ or better” (Baldwin, 1991, no. 2, p. 5).

In the 1989 survey, candidates “reasons for not completing high school fell into seven distinct categories: Disengagement from School; Marriage or Pregnancy; Home and Family Problems; Employment-Related Reasons; Social Behavior Problems; Shortcomings of the School; and Academic Problems” (Baldwin, 1991, no. 4, p. 1). Most GED candidates report taking the GED Tests for job-related reasons. When asked in the 1980 survey, 68 percent of GED candidates said they planned to enter a college or university, trade, technical, or business school after receiving the credential.

More than 90 percent of the examinees in the 1980 survey said that they read books, magazines, or newspapers at least once per week (Baldwin, 1990, p. 12). The level of literacy of GED candidates was positively correlated with the rate of passing (The GED – NALS Comparison Study). Regardless of age or gender, most candidates (84 percent) studied in some way before taking the GED Tests (Hayes & Baldwin, 1993, p. 3). The typical examinee in 1980 reported studying for 20 hours (Baldwin, 1990, p. 10).

The 1989 survey reported a 50 percent increase in preparation time (Baldwin, 1990, p. 1). In 1980 candidates had reported 20 hours of study compared to 30 hours reported in 1989.

The number of candidates with disabilities has been steadily increasing. “Seven percent of candidates surveyed in 1989 reported having a disability. . . . People with disabilities are more likely than others to be high school dropouts and thus could benefit from the GED Tests” (Baldwin, 1991, no. 2, p. 1).

The current Texas compulsory attendance laws require students to be enrolled in school until age 18. Prior to 1997 students were only required to stay in school until age 17. Students age 18 years old and older are allowed to take the GED tests whenever they choose, with or without preparation and with no parent permission required. However, students aged 17 and younger must have parental permission to test; since they must also be in school, most students attend preparation programs although they are allowed to test without instruction with simple proof of withdrawal from school. Students under the age of 18 are truant if they do not attend school, enroll in a GED preparation program, or have a GED credential. Students under age 17 may only prepare and take the GED tests if they are court ordered to do so. Thus, typical public school GED preparation programs cater primarily to 17 year olds who must stay in school, but such programs may include students aged 16 through 21 years of age.

Significance

Although reducing dropouts and creating effective adult basic education programs continue to be current educational concerns, there is relatively little research on the GED

Tests. Most of the serious study and information available has been conducted and published by the American Council on Education. Its studies address in depth the validity and reliability of the tests and provide a detailed profile of those who take the tests. The ACE studies have also looked at some possible correlates between literacy and testing success (The GED–NALS Comparison Study).

Additional studies have focused mainly on the performance of GED graduates in training programs, colleges, and the workplace. Such studies have compared the performance of high school graduates and GED graduates. Most such studies have found no significant differences, thus, validating the use of GED credentials. The other area of research interest has been comparing the GED tests with other tests of adult literacy and educational skill, primarily to find predictors of GED testing success. The GED tests show a correlation with several different adult basic literacy tests.

Research regarding GED preparation has been limited. Studies have been conducted regarding the teaching of individual skills like writing, reading, and performing mathematical calculations. Although there are descriptions and case studies, there are very few studies regarding comprehensive preparation programs. Even though several manufacturers, a few state educational agencies, and even a government agency (Job Corps) have produced workbooks and curriculum guides, the total number and variety of preparation materials is very limited and dated (produced originally some 15 to 30 years ago).

During the 1980s the use of Computer Assisted Instruction (CAI) for GED students, especially as a way to individualize instruction, was explored in a few venues

with mixed results. There are no recent studies of CAI GED instruction since computers have become more powerful and accessible. There are two web-based self-instruction programs, but both are costly and unproved.

This dissertation study sought to evaluate the differing instructional methods of preparing students for GED testing. In particular, a particular CAI program as a comprehensive means for GED instruction was evaluated for effectiveness. The study also focused on high school students, specifically 17 year olds, which have moved directly from high school to GED preparation. Since current GED candidate profiles show that the majority who test are young and prepare 20 to 30 hours before taking the tests, findings applicable to the test groups will be applicable to the majority of GED candidates. If students likely to drop out are directed immediately toward GED instruction, they may be more likely to complete GED credentials.

If the study can also show ways to increase the overall passing rate of GED candidates in the program, there will be a direct reduction in the number of dropouts. Finding the best way to predict and promote GED success reduces the dropout rate and promotes the success of students who might otherwise be very limited in the choices they can make post-high school.

Methodology and Reporting of Data

Setting

Research was conducted using students and programs currently in place in the Garland Independent School District. Garland is a northeast suburb of Dallas, Texas. In 2000 – 2001 the Garland Independent School District had an enrollment of approximately

50,000 students and included six large (5A) comprehensive high schools with populations around 2,500, one alternative night high school with a population about 250, and one alternative discipline high school with a population of about 100. Each high school had a GED instruction program in place on its campus. The sample groups were naturally occurring in-place groups. The first group was from one of the comprehensive high schools and used a traditional preparation method with Steck-Vaughn commercially prepared materials and was labeled “traditional” for the study. The second group was from the alternative night high school and used test / retest of GEDTS practice tests as its preparation method and was labeled “test / retest” in the study. The third group was from a weekend program at the discipline alternative school that used CAI instruction and was labeled “computer-assisted.”

Population and Sample

The study included all students enrolled in Garland Independent School District GED preparation programs during the school year 1999 – 2000 from August 9, 1999 through May 23, 2000. The samples were considered according to students' locations and sample sizes were nonrandom and unequal in naturally occurring groups. Students were free to choose any program offered and to move between groups. The majority of students were 17 years of age because students 17 years old and younger in Texas are not permitted to test without parental permission and are required to be in school. They also need parental permission to enroll in an instruction program. Students 18 years old and older may test without any instruction and do not need parental permission for testing or instruction. Students in the groups ranged in age from 16 to 21 years. Students aged 16

years and younger were allowed to enroll in instruction and to test if they had been court-ordered to do so. There were a limited number of 15 and 16 year olds in the groups. Many students over the age of 18 choose instruction programs designed for adults rather than those offered in the regular school program.

Definition of Terms

1. Effective Instruction: Instructional effectiveness was judged according to the testing / passing rates of students.
2. CAI: Computer Assisted Instruction
3. GED: General Education Development
4. GEDTS: General Education Development Testing Service
5. GED candidate: Student preparing for GED tests who has taken some but not all the tests or passed some but not all.
6. GED graduate: Student who has taken and passed all parts of the GED examination and received a credential.
7. GED Tests: A battery of five norm-referenced tests in the areas of social studies, science, mathematics, writing, and literature.
8. Traditional GED curriculum: Commercially prepared workbooks by Steck-Vaughn or Contemporary Books and official practice tests provided by GEDTS.
9. Test / Retest GED curriculum: Sets of seven different practice GED tests used in succession as the method of GED preparation.
10. GED Computer-Assisted Instruction: Curriculum offered by NovaNET, Inc. covering the five instructional areas and practice tests presented individually via a computer.

11. GISD: Garland Independent School District: Suburban district outside of Dallas, Texas where study was conducted.
12. Literacy rate: The literacy rate of students was measured using the Iowa Test of Basic Skills reading test.

Research Questions

What is the relationship between the preparation methods used and the passing rate of students?

What is the relationship between total student preparation time and passing rate?

What is the relationship between the number of student withdrawals from the preparation program and the preparation method used?

What are the characteristics of GED students?

What are the characteristics of GED graduates?

Is there a correlation between literacy rate (Iowa Test of Basic Skills reading score) and the cumulative GED score?

Is there a correlation between the number of high school courses completed by a student and the cumulative GED score?

Is there a correlation between a student's IQ and the cumulative GED score?

Is there a correlation between a student's high school GPA (Grade Point Average) and the cumulative GED score?

Is there a correlation between passing all TAAS (Texas Assessment of Academic Skills) tests and passing the GED tests?

Is there a correlation between a student's TAAS math score and GED math test score?

Is there a correlation between a student's TAAS reading test score and the GED literature and the arts test score?

Is there a correlation between a student's TAAS writing test score and the GED writing test score?

Is there a correlation between a student's TAAS social studies score and the GED social studies score?

Is there a correlation between a student's TAAS science score and the GED science score?

Hypotheses

The primary hypothesis to be tested is:

H1: There is no significant difference in the passing rates of GISD students using computer-based instruction and those using traditional instruction.

Additional hypotheses related to the primary hypothesis are:

H1A: There is no significant difference in the passing rates of GISD students at the different locations.

H1B: There is no significant difference in the withdrawal rates at the different locations.

H1C: There is no correlation between the hours spent in preparation classes and the passing rate of students.

The secondary hypothesis was:

H2: There is no significant relationship between certain student characteristics and GED tests success. The student data to be considered are:

Gender

Race

Age

TAAS scores

IQ (based on CogAT test)

ITBS (Iowa Tests of Basic Skills) Reading score

High School Credit Profile

High School GPA

Attendance Profile

Discipline Profile

Related hypotheses were:

H2A: There is no significant relationship between student literacy as measured on the ITBS and GED cumulative test scores.

H2B: There is no significant relationship between the number of high school courses completed and cumulative GED test scores.

H2C: There is no significant relationship between student IQ and cumulative GED test scores.

H2D: There is no significant relationship between student high school GPA and cumulative GED test scores.

H2E: There is no significant relationship between a student passing all TAAS tests and passing the GED tests.

H2F: There is no significant relationship between a student's TAAS math test score and GED math test score.

H2G: There is no significant relationship between a student's TAAS reading test score and GED literature and the arts test score.

H2H: There is no significant relationship between a student's TAAS writing score and GED writing test score.

H2I: There is no significant relationship between a student's TAAS social studies score and GED social studies test score.

H2J: There is no significant relationship between a student's TAAS science score and GED science test score.

Student characteristics of gender, race, and age were examined to provide demographic data with frequencies and percentages to describe each of the groups.

Limitations of the Study

Because the study looked at only three examples of preparation curricula, it may be that other more effective methods exist. The study was limited to a single school district in Texas. The study was also limited to students between the ages of 15 and 22 and did not include adults over the age of 22.

Data Collection

Data regarding GISD student characteristics were gathered using currently maintained data from computerized student records. Passing rates were obtained from

GED teachers or test administrators. Students in each group were assigned a study ID number and are not referred to by name or characteristics.

Personal interviews of students in each group were conducted over the telephone. The interview asked students about work experience, family background, reasons for leaving school, reasons for pursuing a GED, amount of GED preparation, and evaluation of preparation curricula (see Appendix A for interview questions). Interviews were transcribed for evaluation.

Data Analysis

Information regarding passing rates or graduation rates for GED programs was evaluated as a simple percentage. Cumulative scores were used to compare the achievement level of students who had taken all GED tests from each of three naturally occurring groups in a one-way ANOVA. The dependent variable was achievement measured with the cumulative score. The independent variable was the instructional method used in the three groups. Demographic data were reported as frequencies and percents for race, gender, age, grade level, home language, immigration status, economic status, and special education status. The expected correlations of reading level and high school courses completed with cumulative scores were checked with the Pearson Correlation Coefficient. A multiple regression equation was used to explain the variance in scores partitioning the variance among the significant characteristics of students.

Conclusions

If it is demonstrated that the type of GED preparation program provided does not affect the students' passing rates, the school district will have valuable information.

Choosing a GED curriculum can be based strictly on what is most economical or most easily delivered. If certain characteristics can be shown to be significant predictors of overall success or success in certain groups, potential GED students can be counseled to carefully consider whether and how best to pursue GED instruction. Current school programs can also be geared toward preparing students to pass the GED Tests in case that goal becomes the chosen route to high school completion.

If the passing rate of GED students is found to be relatively low or below expectations, the primary question will be to find ways to raise that passing rate. An analysis of the curriculum and the withdrawal rates may help prepare a plan to improve GED preparation and, thus, GED Tests passing rates. The school district will need to determine if any passing rate is acceptable because it prevents dropouts, or if it is willing to provide whatever resources might be needed to push the passing rate close to 100 percent. Is the purpose of GED classes to reduce the measured dropout rate for AEIS ratings, or is it to help individual students find a better future even without a high school diploma? If the latter is true, than even one dropout is too many, and it will be important to identify what promotes GED success and provide it. GISD has already shown a commitment to GED instruction by offering preparation in every high school. The current challenge is to find more success with currently enrolled GED students.

CHAPTER 2

REVIEW OF CURRENT INFORMATION AND RESEARCH

The Design of the General Educational Development Test

Current Format

The content of the GED Tests is designed to correspond to the knowledge of graduating high school seniors. The GEDTS staff works closely with an ethnic and geographic variety of both writers and reviewers from secondary and adult education to align the GED tests with high school curricula (Auchter, Sireci, Skaggs, 1993, p. 9). The GED Tests assess the examinees' knowledge of broad concepts and problem-solving ability. The tests do not focus on factual knowledge from individual disciplines but rather on comprehensive, integrated skills (Baldwin, 1992, p. 2).

Examinees use, rather than recite, knowledge and information (Auchter, 1993, p. 11). Examinees are required to "use some knowledge that they have acquired or some information that is provided in the reading material that accompanies the item" (Auchter, et al., 1993, p. 11). Further, the readability of the tests is determined from pretesting or assessment rather than through the use of readability formulae.

The GED Tests questions are designed to include all the cognitive skills of Bloom's Taxonomy (ACE, 1998, <http://www.acenet.edu/calec/ged/spec-A.html>). Those objectives include comprehension, application, analysis, synthesis, and evaluation. Questions are not designed to test a candidate's knowledge of facts; questions are

designed to include common experiences from everyday life and work. “The tests also measure those major and lasting educational skills and concepts that contribute to functioning successfully as adults in our society” (Auchter, et al., 1993, p. 11). The GED Tests are used to obtain an alternative credential to a high school diploma; they are not a confirmation of knowledge required for high school graduation. In fact, the American Council on Education has a policy which states that GED tests are not to be administered to high school graduates and are not be used to validate high school diplomas (Auchter, et al., 1993, p. 1).

The current version of the GED Tests contains five separate parts. The first part, Writing Skills, has two sections. The first section of the Writing Skills Test is a multiple-choice test of 55 questions that must be completed in 75 minutes. This section of the test covers sentence structure, usage, and mechanics with three question formats: sentence correction, sentence revision, and construction shift. Of the 55 questions, five are field test items. The second section of the Writing Skills Test requires the candidate to write an essay in a 45 minute time period; its scoring accounts for approximately 35 to 40 percent of the Writing Skills Test score. The second part of the GED Tests is a 64-item multiple-choice test covering social studies that must be completed in 85 minutes. The social studies questions come from the areas of history, geography, economics, political science, and behavioral science. Of the 64 questions, four are for field-testing. The third part of the Tests is a 66-question multiple-choice science test limited to 95 minutes. The Science Test covers biology, earth science, physics and chemistry. “The Science Test

contains reading passages and individual questions that test the understanding of basic scientific principles and ideas. Most Science test questions ask examinees to use the information given to analyze and solve problems, explain results, or interpret information” (Malizio & Whitney, 1982, p. 2). Six items of the 66 on the science test are for field-testing. The fourth part of the Tests, Interpreting Literature and the Arts, contains 45 multiple-choice items which must be done in 45 minutes. The Interpreting Literature Test is a passage-based test requiring comprehension and analysis. Each reading selection is preceded by a “purpose question” to focus the reading. The passages are drawn from popular literature, classical literature, and commentary on the arts. There are five field-test items among the 45 questions. The final part of the Tests is a 56 item mathematics test scheduled for 90 minutes. The mathematics test was designed for problem solving in realistic contexts (Auchter, et al., 1993, p. 14). Mathematics questions often ask the candidate to select the correct way to set up the problem rather than its numerical answer. Every math test includes a formula page; about 15 percent of the items require a formula to solve. The Mathematics Test covers arithmetic (measurement, number relationships, data analysis), algebra, and geometry. There are no purely computational questions. No calculators are allowed, but efforts are made to simplify the numbers used. All five parts of the Tests must be passed with a minimum score and a total cumulative score before a GED certificate is awarded.

The administration of the GED Tests is a shared responsibility. Proper administration and supervision is the responsibility of the different states or other testing groups. Maintaining the tests and their integrity is the responsibility of the GED Testing

Service (GEDTS). Each testing site is responsible for scheduling test administrations and for scoring tests. The GEDTS approves the computer scoring system used and only allows the Writing Skills essays to be scored by certified essay scoring sites (Auchter, et al., 1993, p. 5).

The GED Tests are continuously reviewed. Beginning in 1982 the GED Testing Service was required to review the purpose of the Tests, to evaluate the existing policies of administration, and to recommend changes. Their review was to include three basic questions: “1) What goals should the GED testing program have? 2) What knowledge bases and skills should the GED Tests measure? 3) How should the GED Tests be organized and administered?”(Auchter, et al., 1993, p. 3) Surveys completed by GED administrators, the GED National Advisory Committee, and samples of GED examiners and adult education experts and teachers guided the review process. In the development of the current battery of tests five major themes were used. The first theme was to ensure that the Tests required high level thinking ability and problem-solving skills. The second theme focused on the relationship of the skills measured to the real world of work (Auchter, et al., 1993, p. 4). The third and fourth themes required an awareness of computer technology and demonstration of consumer skills. Lastly, the tests were to use settings recognized in everyday life.

Test Norming

The norming of the GED Tests is designed to show that GED graduates have comparable knowledge to graduating high school seniors. “The overall performance of GED graduates, averaged over all five GED Tests, equaled that of graduating high school

seniors. College admissions officers and registrars should recognize that, on average, the academic skills of GED graduates are comparable to those of seniors” (Baldwin, 1992, p.1). In fact, as reported in the 1989 performance study, GED graduates outperformed high school seniors in the Social Studies Test (51 to 50 average), Science Test (51 to 50 average), and the Interpreting Literature and the Arts Test (52 to 50 average) (Baldwin, 1992, p. 3). The GED graduates and high school seniors had approximately equivalent editing and error correction skills. Both seniors and GED graduates correctly answered about 76 percent of the writing skills multiple-choice questions. However, the seniors demonstrated somewhat better essay writing skills (average scores of 6.8 compared to 6.4 for GED graduates). GED graduates answered an average of four percentage points higher than seniors did on the Social Studies Test. GED graduates also averaged four percentage points higher on the Science Test and four percentage points higher on the Literature and the Arts Test. Seniors scored an average of four percentage points higher on the Mathematics Test (Baldwin, 1992, pp. 5 – 7).

The GED Tests are norm referenced with the performance of graduating high school seniors (Auchter, et al., 1993, p. 25). When national curricular trends change, the GED Tests content is changed and scores are “re-normed” or standardized. Renorming was conducted in 1955, 1967, 1977, 1980 (Malizio & Whitney, 1982, p. 2) and in 1987 and 1990. The norm group is formed through a two-stage stratified random sampling process. Schools are grouped by geographic location and socioeconomic status. Within schools, students who are expected to graduate by fall and who do not require a special edition of the Tests are randomly sampled.

The 1987 norming used 82 schools from the northeast, 81 from the southeast, 88 from the north central, 109 from the central, and 90 from the west regions. There were also 24 northeastern, 23 southeastern, 18 north central, 16 central, and 26 western private schools used a total of 450 (80.8 percent) public schools and 107 (19.8 percent) private schools participated in the norming. A representative number of schools from each of five socio-economic levels were chosen. Eleven schools were from the first (lowest) socio-economic level, 43 from the second level, 156 from the third level, 165 from the fourth level, and 75 from the fifth (highest) socio-economic level.

To report scores to examinees, the number of items correctly answered are converted to standard scores and percentile ranks (Malizio & Whitney, 1982, p. 3). “The percentile rank of a standard score indicates the percent of persons in a particular sample scoring at or below that standard score” (Malizio & Whitney, 1982, p. 4). A standard score scale ranging from 20 to 80 with a mean of 50 and standard deviation of 10 was constructed for each of the five tests. This standard score scale is based directly on the performance of graduating high school seniors (ACE, 1998, <http://www.acenet.edu/programs/CALEC/GED/ScoreScale.html>). “Cumulative proportion distributions of scores were smoothed using the seven point Cureton-Tukey (1951) rolling-weighted average procedure” (Auchter, et al., 1993, p. 28). This scaling was used to produce a raw-to-standard score for each test. The percentile rank for each possible raw score was determined by using the midpoint of each raw score interval in the distribution (Auchter, et al., 1993, p. 28).

While there is a minimum lowest score allowed by the testing service, the minimum score requirements for credentials are determined by each state, province, or territory that contracts to use the GED Tests (Auchter, et al., 1993, p. 7). Current test-takers in Texas are required to score a minimum of 40 on each part of the test and to have a cumulative score of at least 225 (an average of 45 on each part).

The cost of taking the tests also varies. Testing sites in Texas are allowed to set their own costs for testing. While it is easy for candidates to find free or inexpensive instruction, the cost for testing generally ranges from \$50 to \$75. The Garland testing site offers candidates a choice between paying for the entire battery of tests at the beginning (\$60) or paying per test (\$15 for the first test, \$10 for the second through fifth test, and \$5 for the final test).

There are several reasons that a standard scoring format was chosen. Norm referencing of GED scores allows comparisons among groups. The method also permits the consistent reporting of a candidate's scores, using the same scale for all five tests. Finally, "equated standard scores adjust for unintended differences among forms to ensure that an examinee's score will not be influenced by the particular test form taken" (Auchter, et al., 1993, p. 6).

The Writing Skills Test score is a weighted composite of an essay standard score and a multiple-choice standard score. The GEDTS weighted the essay as much as possible without dropping the composite reliability score below .86 (Auchter, et al., 1993, p. 28). Operational writing topics are selected from previously field-tested topics.

Test Reliability

“The reliability of the multiple-choice portions of the GED Tests is evaluated by calculating estimates of the internal consistency reliability, the standard error or measurement, and the parallel forms reliability of the tests” (Auchter, et al., 1993, p. 231). The Kuder-Richardson 20 reliability coefficient was used to make estimates of the internal consistency reliability of the GED Tests. The Standard Error of Measurement (SEM) was used to compare the five subject area tests. SEMs were reported in standard score units. Looking at all the test forms, “the raw score SEMs ranged from 2.2 to 2.7 for Test 1, 3.1 to 3.3 for Test 2, from 3.1 to 3.3 for Test 3, from 2.1 to 2.6 for Test 4, and from 2.5 to 2.8 for Test 5. This means that 68 percent confidence intervals range from 4.2 to 6.6 on tests with raw score ranges from 0 to 40, 50, or 60”(Auchter, et al., 1993, p. 33). Test scores for the GED candidates are less variable than those of the high school seniors; thus, the GED group is more homogeneous.

The correlation of examinees’ scores on more than one test is used to estimate parallel forms reliability. In the standardization of the high school seniors group, a half-length GED practice test was administered with a full-length operational GED test (Auchter, et al., 1993, p. 39). Since the tests were not the same length, they were not truly parallel. A formula from Gulliksen was used to adjust for the length of the half-form tests.

Three measures: reader reliability, score scale stability, and essay score reliability measure the reliability of the essay portion of the Writing Skills Test. Its reliability was evaluated both with respect to the:

congruence among readers at the same scoring site reading the same essay (reading reliability), and the congruence between the scoring site readers and the GEDTS Writing Committee (score scale stability). The congruence among the readers at a particular scoring site is determined by calculating the intra-class correlation. The congruence of the particular scoring site is determined by evaluating the agreement between the scoring site and the Writing Committee on a group of specially selected essays (Auchter, et al., 1993, pp. 39- 40).

In considering the reliability of essays, three different types of essay topics: description, expository, persuasion were correlated at rates ranging from .70 to .90 across three scoring sites. These different types of essays were considered separately because different rhetorical modes may require different skills (Swartz, Patience, & Whitney, 1985, No. 6, p.8).

The GEDTS has established a procedure to maintain the reliability of different scoring locations. Scoring sites must demonstrate a certification score of 90 in order to be certified by GEDTS (Auchter, et al., 1993, p. 40). Both random monitoring and systematic monitoring provide a continuous monitoring of scoring sites after they are certified. To randomly monitor scoring sites, the GEDTS Writing Committee selects 40 random essays from a site to rescore (Auchter, et al., 1993, p. 40). “Score scale stability was evaluated by calculating the agreement of the site scores and the Writing Committee scores on the same papers” (Auchter, et al., 1993, p. 40). Individual site reading reliability was measured using the Spearman-Brown formula applied to intraclass correlation of readers within the site.

Reading reliability for the GED Tests essay was worked out through a process of testing and scoring high school seniors (approximately 6,000) and GED examinees (approximately 2,000). All essays were scored holistically using a scoring guide constructed by the GEDTS. The studies included calculating the percent of readers awarded the same scores, contiguous scores (within one point), and discrepant scores (two points or more different). A correlation was made of the first and second ratings. An elaborate method of scoring essays was constructed in which readers were gathered at one site, trained, and then asked to rate essays. In the study conducted in Washington, readers were gathered together in a single location and given a review of holistic scoring and the scoring guide; they scored sample papers and discussed standards. A “table leader” monitored scoring by randomly scoring some of the essays at the table; analysis showed a correlation of .70 between the scores of the leader and scores of individuals. The second study was done in Iowa where papers were scored at local centers throughout the state. Readers were trained in holistic scoring at workshops and were required to qualify by correctly scoring at least 80 percent of standard essays presented. The standards were maintained by using sample papers and the GEDTS scoring guide. Paired readers were able to achieve a reading reliability coefficient of .82 on a sample of over 500 essays. Each essay was scored twice and then any discrepant pair of scores for a given essay was resolved by scoring a third time. “Trained readers holistically scoring essays in a controlled setting can, indeed, achieve acceptable degrees of reliability” (Swartz, Patience, & Whitney, 1985, No. 7, p. 6).

The reliability of the writing skills composite score is especially important because that score is used to make pass/fail decisions in questionable cases (Auchter, et al., 1993, p. 45). Several studies were conducted to determine the weighting of the essay in the composite score. The idea was to weight the essay as much as possible without lowering the estimated test-retest reliability of the composite test score. A weighting of .36 for the essay and .64 for the multiple-choice portion were chosen. “The range of values for the coefficients indicates there is a substantial relationship between the two measures, but that the two tests are measuring somewhat different skills. “ (Swartz, et al., 1985, No. 7, p. 9).

Scoring of the writing skills test were compared for three different topics. The writing skills correlations varied from .56 to .69 for the total items, with the spelling items correlating from .34 to .53; capitalization and punctuation from .46 to .52; usage from .50 to .63; sentence correction from .49 to .57; logic and organization from .42 to .56. The same sizes used were 304, 258, and 284.

The multiple-choice section of the Writing Skills Test is an indirect measure of writing – focusing on usage and editing skills. There are studies demonstrating the high degrees of reliability for multiple choice measures of writing; however, such measures are indirect and challenged by some educators (Swartz, et al., 1985, No. 6, p. 5).

Advocates for the essay writing aspect of the writing test argue that the essay is a direct demonstration of the student’s writing skill rather than a correlate of it (Swartz, et al., 1985, No. 6, p. 5). “One of the important elements of the credibility of the GED credential (and, thus, an aspect of the Test’s validity for its intended purpose) is its

comparability to learning outcomes and standards in American and Canadian high schools” (Swartz, et al., 1985, No. 6, pp. 5-6). In the earlier study, any papers with a discrepant score of two or more points were read a third time. Out of 154 papers read, only seven papers had a one point score change; the other papers had no or less than one point score change (Swartz, et al., 1985, No. 6, p. 8). “The extent of these correlations indicates that the two tests (multiple choice and essay) are measuring related but clearly different sets of skills” (Swartz, et al., 1985, No. 7, p. 11). “The overall validity of a test of writing is improved significantly by combining highly reliable scores from an indirect measure of writing with a more valid (though relatively less reliable) direct measure of writing” (Swartz, et al., 1985, No. 6, p. 11). Even though direct writing measures are valid they are somewhat less reliable than indirect measures. However, the overall validity of a writing test is improved by combining a direct and indirect measure.

In addressing the issue of the time candidates spent writing the essay, no significant correlation was found between the time used and the essay score. The highest correlation noted (.29 to .45) was for persuasion essays. Thus, the time limit on the writing skills essay portion seems to be reasonable.

Test Validity

A defense of test specifications and the test development plan provides reasoning for content validity (Auchter, et al., 1993, p. 48). The content validity of the GED Tests is based on the extent to which its questions reflect the outcomes of a high school education. “Content validation usually rests on subjective analyses of test content made by subject-matter experts. . . . To ensure adequate content representation of the GED test,

nationally representative groups of experts were used to develop the current test specifications, and are used currently to evaluate each operational GED test form” (Auchter, et al., 1993, p. 48). Nominations for members of the Test Specifications Committee are solicited from a wide variety of sources such as professional organizations, state adult education directors, GED administrators, members of the Commission on Educational Credit and Credentials, and members of the GED Advisory Committee. Those selected must be nationally recognized as authorities in their subject, have extensive experience in secondary or adult education, have a thorough knowledge of the relevant skills and concepts in their subject, and have knowledge and experience with the objective testing process. Members are selected from a sample by geography, sex, and constituency.

Content specialists are recruited from across the U.S. to create items that meet the GED test specifications. All these items are reviewed and edited internally by GEDTS staff; they are sent out to a carefully selected group of content reviewers who are familiar with the test specifications. These reviewers determine whether the items are congruent with the test specifications and whether they are classified correctly according to the specific subject areas they are presumed to measure. . .

Items that are deemed appropriate in terms of their content representation are field-tested on operational GED test forms (Auchter, et al., 1993, p. 49).

After individual items are approved, they are added to operational forms of the Tests. Final Form Review Committees check the content and cognitive classifications of each

test question in each subject area test to decide if the operational form adequately represents the test specifications (Auchter, et al., 1993, p. 49).

The GEDTS wants to ensure that the tests are valuable to employers as well as to those considering additional education. “To evaluate the congruence of the knowledge and skills measured by the GED Tests and the knowledge and skills considered essential for workplace readiness, a study was conducted to compare the types of basic skills measured on the GED Tests with those needed in the workplace” (Auchter, et al., 1993, p. 49). These skills included reading, writing, mathematics for the workplace, and behavioral and work process skills such as creative thinking, problem solving and goal setting. The GED Tests endeavor to measure the skills of reading, writing, and mathematics. The Tests do not measure leadership or speaking skills -- skills not easily tested.

GED Tests scores have also been compared to the ACT (Adult Competency Test) Assessment. The correlation ranged from .57 on the social studies tests to .71 on the writing tests. Composite scores correlated at .74 for ACT and GED. In a look at Florida’s high school examinees and their performance on the standardized achievement test measuring reading, language, and mathematics, there was a .46 to .74 correlation between their scores on those tests and the GED. Further comparisons with the Florida state competency exams and GED scores showed .47 to .58 correlations. “It was clear that students who could not pass the state’s test were not likely to pass the GED” (Auchter, et al., 1993, p. 54). In addition, comparing GED scores with the Degrees of

Reading Power (DRP) test for a sample of New York City candidates showed a .77 correlation.

The construct-related validity of the GED tests was measured by checking the years of high school instruction of GED candidates compared to their performance in subject areas. “The results show that for each test, the average standard score increased with the number of years of instruction. The strongest relationship was observed for the Science and Mathematics tests, in which, each year of instruction was associated with an average increase of four to five GED standard score points. For Literature, the biggest improvement came between the third and fourth years” (Auchter, et al., 1993, p. 56). The average science scores were 46 for one or two years of instruction, 50 for three years, 55 for four years, and 59 for more than four years. The average math scores were 38 for one year, 45 for two years, 49 for three years, 54 for four years, and 59 for more than four years of instruction. The relationship between specific courses taken and GED Tests scores was also examined. For each course considered, the percentage of students passing at each selected GED score standard was found for seniors who took the course and those who did not (Auchter, et al., 1993, p. 57).

The following conclusions were drawn regarding GED candidates and high school seniors:

- The GED Test performance of GED graduates and graduating high school seniors is very similar.
- Between one-fourth and one-third of graduating high school seniors would not pass the GED Test, indicating that the GED passing standards are rigorous, and are referenced to the performance of high school seniors who receive a traditional diploma.

- GED scores are strongly related ($r=.30-.70$) to scores on standardized tests and minimum competency exams. The GED standards are higher than those for minimum competency exams.
- GED scores correlate strongly and positively ($r=.40-.70$) with high school grades.
- Significant percentages (13.84%) of graduating seniors with C or lower grades would not pass the GED Test. In the 1991 standardization, these students accounted for approximately one-fourth of all graduating seniors.
- More years of instruction in a given content area are associated with higher GED scores in that area. Most seniors who passed the 40 and 45 GED score standards had at least two years of instruction in the respective content area.
- There is a high degree of correspondence between the content of the GED Tests and the content covered in the courses that are taken by most high school students (Auchter, et al., 1993, pp. 58-59).

(See Table 5.4 above)

Additionally, there has even been a study of the correlation among the five GED Tests. The range found was from .64 to .81. “The magnitude of these correlations suggests that the five subject tests are measuring proficiencies that are strongly related, but distinct” (Auchter, et al., 1993, p. 59). Researchers have also examined the performance of GED graduates and high school graduates in college and found no statistically significant difference in the GPAs of high school dropouts, high school graduates, and GED graduates (Auchter, et al., 1993, p. 60). The same study found no difference in the ratios of credit hours passed to credit hours attempted.

GED graduates show comparable performance with high school seniors on the job. “In a survey of 101 Florida employers, Grise and Klein (1987) found that 57% of the respondents felt that GED graduates performed as well as high school graduates, 12% felt that GED graduates did not perform as well, and 4% thought GED graduates performed better” (Auchter, et al., 1993, p. 60). GED graduates also show a higher employment rate and higher rate of pay than nongraduates do. High school graduates showed 78 percent

employment followed by GED graduates at 64 percent compared to the 56 percent of dropouts. Pay rates for the three groups fell in the same order (Auchter, et al., 1993, p. 61). The post-high school education of the three groups was also similarly ordered; high school graduates had the most postsecondary education followed by GED graduates who surpassed dropouts (Boesel, 1998, p. 7).

The results from the large body of research on the consequential utility of the GED Tests suggest the following:

- Candidates take the GED Tests to qualify for a job or to be admitted to an educational institution. For most candidates these expectations are met.
- Employers and postsecondary institutions accept the GED credential as equivalent to the traditional high school diploma for hiring and enrollment purposes.
- It is not known whether GED graduates attain employment levels and wages equal to those of high school graduates, but both groups experience a definite advantage in employment over those with neither credential.
- GED graduates do as well in college as high school graduates in terms of grades and program completion rates. GED graduates, however, are more likely to attend junior or community college than a four-year institution (Auchter, et al., 1993, p. 62).

The History of Changes in the General Educational Development Test

The idea and necessity of the General Educational Development Tests began during World War II. In 1942 a special committee was created to recommend a process for soldiers who had not completed high school to be accredited for their education by taking an appraisal test. The committee recommended that the United States Armed Forces Institute (USAFI) create and fund a useable assessment (Allen & Jones, 1992, p. 18). A subsequent battery of tests was developed by a civilian team of test experts directed by Ralph Tyler. The battery covered the areas of English grammar, social studies, natural sciences, literature, and mathematics. "These tests were designed to provide military personnel and veterans who had not completed a formal high school instructional program the opportunity to demonstrate a level of achievement comparable to that of high school graduates" (Auchter, et al., 1993, p. 2).

In 1943 the first tests were standardized using 35,000 high school seniors in 814 high schools in 48 states. In 1945 the American Council on Education (ACE) established the Commission on Accreditation of Service Experiences (CASE). The purpose of CASE was to coordinate with educational institutions, associations, and organizations in evaluating the military training and experience of service personnel and veterans. The Veteran's Testing Service (VTS) was formed to create the GED tests for both military and civilian candidates at colleges and universities (Allen & Jones, 1992, p. 18). The first GED Tests were administered in 1947 to servicemen on active duty, veterans, and non-veteran adults. "In 1947, the Commission on Accreditation of Service Experiences of

ACE approved the first state-sponsored diploma program in New York that made the tests available to nonveteran adults. It was that state action by New York that transformed the GED program from a national testing operation to the decentralized state management of today's program" (Allen & Jones, 1992, p. 18).

In 1948 the responsibilities of VTS were transferred to Educational Testing Service (ETS). ETS transferred supervision back to ACE in 1954. The first renorming was done in 1955 -- the second in 1967. In 1957 GED Tests were made available to federal correctional and health institutions, and in 1959 the number of civilians taking the GED Tests was greater than the number of military personnel. The Commission specified the role of the states, provinces, and territories in administering the GED program (Auchter, et al., 1993, p. 2). It became a joint responsibility of the Testing Service and the individual states and territories. In 1963 the VTS became the GED Testing Service. In 1964 versions were made available in Braille, large print, records, and magnetic tape. The GED Tests were first available to civilians and foreigners overseas in 1966 and first offered in Canada in 1969. The Spanish-language GED Tests became available in 1971 and the French-language version shortly afterward. The five original GED Tests in use from 1942 to 1978 were:

- Test 1: Correctness and Effectiveness of Expression
- Test 2: Interpretation of Reading Materials in the Social Studies
- Test 3: Interpretation of Reading Materials in the Natural Sciences
- Test 4: Interpretation of Literary Materials
- Test 5: General Mathematical Ability (Auchter, et al., 1993, p. 2)

The entire battery took ten hours to administer.

In 1977 a third renorming was conducted and twelve new forms of the test were introduced in a major overhaul of the tests. The new versions of the tests were introduced in 1978 and were based on work done by high school curriculum specialists. The interpretation of literary materials test was changed to a reading skills test. The reading load in the science and social studies tests was reduced while more concept items were added (Auchter, et al., 1993, p. 2). GED candidates now needed some prior knowledge in science and social studies to pass. The correctness and effectiveness of expression test was changed to a writing skills test. The math test had more practical items added. When first proposed the new tests were to be completed in six hours instead of the ten hours allowed for the original tests (Auchter, et al., 1993, p. 2). However, increased time limits were added for the Writing Skills Test and the Mathematics tests. The final second versions of the tests were:

- Test 1: The Writing Skills Test
- Test 2: The Social Studies Test
- Test 3: The Science Test
- Test 4: The Reading Skills Test
- Test 5: The Mathematics Test (Auchter, et al., 1993, p. 2).

These tests also introduced more life-like contexts and reading material likely to be encountered in an adult's daily life.

The GED tests currently serve 800,000 adult learners annually; one in seven high school credentials awarded in the U.S. each year is a GED equivalency credential. Over

12 million people have earned GED credentials since the first administration (Allen & Jones, 1992, p. i).

Official Practice Tests were first offered in 1979. The fourth renorming and second major revision of GED Tests occurred in 1987 including the new writing sample.

Currently:

the GED testing program belongs jointly to the GED Testing Service of the American Council on Education and to each state, provincial, or territorial department or ministry of education. Each party – from the local school system or community college that provides preparation and testing in the community to the state, provincial, or territorial GED Administrator to the staff at GED Testing Service – is connected to the others through established channels as well as more informal ties based on our shared interests in promoting second chance education to millions of adults without high school diplomas (Allen & Jones, 1992, p. 15).

The GED Testing Service has four specific tasks including test development, policy research, data services, and requested program and contract services (Allen & Jones, 1992, p. 15). The Testing Service is also responsible for promotion and public relations activities.

As part of its contractual responsibility, GEDTS establishes Testing Centers, approximately 3,500 in the United States and Canada. At the Testing Centers, it appoints chief examiners and provides testing materials. The GEDTS provides essay scoring and record keeping to some centers (Allen & Jones, 1992, p. 15). GEDTS also monitors the Testing Centers and responds to questions regarding policy and procedures. Policy

research means that “GEDTS collects and analyzes data relevant to GED candidates and graduates, evaluates the policy implications of research findings, prepares research reports and policy papers and makes oral and written presentations on a variety of issues” (Allen & Jones, 1992, p. 15). Data Services for some testing sites are also provided by GEDTS which “scores GED Tests for the military through DANTES, federal prisons, and several other special programs and populations. It also scores essays for testing centers, scans item tryout data, and supports a variety of other projects” (Allen & Jones, 1992, p. 15).

The GEDTS test development unit contains a director, psychometrician, test production manager, test production coordinator, network systems analyst, network coordinator, and one test specialist for each of the five content areas. External experts write questions that are subjected to a seven-stage review process before being field-tested. Each question is reviewed for accuracy, fairness, and general quality. It may be accepted, edited, or rejected. If accepted, it is sent to three independent external content reviewers who judge accuracy, clarity, suitability, and cognitive level on a rating form. The director of test development concurrently reviews the question. The GED test specialist revises or rejects the question based on the reviewers’ comments. The next step is a measurement/bias review conducted by two independent, external psychometricians. They look for sound test construction, item flaws, and fairness. The GED psychometrician concurrently reviews the question. The question again passes to the GED test specialist. In the sixth stage, an external professional editor reviews the

question for grammar, spelling, vocabulary, format, and surface errors. It passes again to the GED test specialist for final review (Auchter, et al., 1993, pp. 15 – 18).

After questions pass the seven stages of review, they are field tested in the operational forms of the GED tests. They are not counted in scoring. The test administration is also used to screen for age bias. Based on the performance in the field test, questions are selected for operational and practice test forms. “Once operational forms have been approved and printed, they are administered to a random stratified sample of high school students prior to graduation in a standardization administration and are equated to the 1987 norming sample” (Allen & Jones, 1992, p. 16).

Since 1982 the GEDTS Commission has operated under Policy 2.2 which charges the staff of GEDTS with on-going review of the purpose and policies of GED testing to recommend changes (Auchter, et al., 1993, p. 3). The currently used version of the GED Tests was developed in a five-year review process that began in November 1981 (Auchter, et al., 1993, p. 3). As part of this review process, surveys were conducted asking GED Administrators, the GED Advisory Committee, and GED examiners to give input on the skills that should be tested and how tests should be administered and organized. There were three major areas of change: a writing sample was added, increased emphasis was made on critical thinking and problem solving skills, and an awareness of computer technology was added. “In 1984, the GED Testing Service staff convened a 26-member Test Specifications Committee of secondary curriculum and adult education experts charged with developing general recommendations for the content of the next generation of tests. The draft specifications were based on the survey results and

numerous national reports on the condition of secondary education”(Auchter, et al., 1993, p. 3). The resulting report became a working plan for guiding research and implementation of the suggestions. The currently used version of the GED Tests came into wide use in 1988. At the time the 1988 version of the tests was introduced, the GED Tests were administered to more than 750,000 GED candidates at more than 2,700 sites across the U.S. (Auchter, et al., p. 4).

The GED Tests are again scheduled for revision in 2002. “In January 1997, the GED Testing Service convened a 29-member Specifications Committee . . . to develop specifications for the new GED 2000 Series Tests. The Test Specifications Committee was selected after an extensive nomination process and consisted of experts from throughout the United States and Canada representing the four academic disciplines of English language arts, mathematics, science, and social studies” (ACE, 1998, <http://www.acenet.edu/programs/CALEC/GED/GED2000.html>). The GED Testing Service is now researching the Specification Committee’s recommendations to design the new GED 2000 Series Tests. The GED Advisory Committee and the ACE and the Commission on Adult Learning and Educational Credentials approve the final specifications for the tests (ACE, 1998, <http://www.acenet.edu/programs/CALEC/GED/GED2000.html>). The purpose of the tests has not changed and the administration of the tests is not expected to change. “The new tests will continue to reflect the major and lasting outcomes of a four-year high school program of study in the core academic disciplines . . . with an increased emphasis on

workplace and higher education needs” (ACE, 1998,
<http://www.acenet.edu/programs/CALEC/GED/GED2000.html>).

There are five major changes proposed for the 2000 series:

- The current Writing Skills Tests and Interpreting Literature and the Arts may be combined into one English Language Arts Test, but it will still include a direct writing sample.
- Examinees will be allowed to use a calculator for approximately 80 percent of the Mathematics Test. Calculators will not be allowed on the 20 percent of the test that tests estimation and calculation.
- “The English Language Arts Test will reflect the NAEP (National Assessment of Educational Progress) framework and require an additional section on informational texts” (<http://www.acenet.edu/programs/CALEC/GED/GED2000.html>). Cross-disciplinary skills like information processing, problem solving and communicating will be more evident in the battery of tests. There will also be more emphasis on analyzing data and statistics and probability in the Mathematics Test.
- The fifth test may be a cross-disciplinary test in which examinees would use information-processing skills to interpret a range of texts in the core academic disciplines.
- “The tests will include machine-scorable but non-multiple choice questions (such as gridding answers in mathematics)” (ACE, 1998,
<http://www.acenet.edu/programs/CALEC/GED/GED2000.html>).

Profile of GED Candidates

In the literature about those who take the GED Tests, test-takers are termed “GED candidates” and those who obtain certificates are termed “GED graduates.” The profile information generally refers to all those who take the GED Tests – thus, GED candidates or examinees. Current statistics indicate that about one out of seven high school credentials awarded each year are GEDs (AEC, 1998, <http://www.acenet.edu/calec/ged/home.html>). It is estimated that approximately 13.6 million people have earned high school equivalency diplomas since the program began (GEDTS, 1990, p. 6). In 1996 Texas was the first GED testing jurisdiction to surpass issuing one million GED credentials. New York surpassed the one million mark in 1998.

Approximately 25 million women and 22 million men in the United States have not graduated from high school and are potential GED candidates. “In 1996, 758,570 persons worldwide completed the GED battery” (AEC, 1998, <http://www.acenet.edu/programs/CALEC/GED/96StatRpt/Highlights.html>). Of those tested, 542,578 or 72 percent received their GED certificates. In 1998, 822,000 adults took the GED Test at 3,718 testing centers. More than 510,000 of that group passed and received credentials (GEDTS, 1999, p. 9). This 1998 number represents the highest level of test-takers ever to take the test in a single year since statistics have been collected. There has been a 16 percent increase in test-takers during the past decade. “Only two jurisdictions worldwide reported decreases of 15 percent or more in the number completing the battery. These were: Alaska (16 percent) and Virginia (20 percent)” (AEC, 1998, <http://www.acenet.edu/programs/CALEC/GED/96StatRpt/Highlights.html>).

Every other jurisdiction showed an increase; several states showed increases of 15 – 30 percent. Thus, more people are taking and passing the GED Tests each year. In general, those GED candidates tend to be young, have completed tenth grade or higher with grades of “C” or better, prepare for the tests in some manner, and read about eight hours per week. Only about 13 percent of testers do not complete all the tests (GEDTS, 1999, p. 5).

In a report published in 1981, the GED Testing Service surveyed a nationally representative sample of examinees in 1980. There were 13,000 responses from 250 randomly selected GED testing centers in the U.S. (GEDTS, 1990, p. vii). These sites represent about 10 percent of the currently used sites. At least one center was selected from each state. “The largest numbers of examinees were tested in New York, Texas, Pennsylvania, California, Florida, and Illinois, representing a combined total of more than 44% of the sample” (GEDTS, 1990, p. 5).

A survey was conducted again in fall 1989 and expanded to document emerging trends. The reported findings were published in 1990 and based on 7,500 responses to the survey. The survey addressed the issues of age, gender, educational background, employment, test-taking reasons, preparation, and dropout reasons (GEDTS, 1991, p. 1).

The GED Testing Service has produced a report profiling GED test-takers each year from 1958 to the present (GEDTS, 1999, p. 4). In 1998, “the GED Special Projects unit began producing Who Took the GED? The GED 1998 Statistical Report, and GEDTS updated its computer programs to generate the statistical tables “ (p. 4). The

GED Annual Statistical Report gives tabulations of the numbers and percentages of all persons who took and passed the GED Tests in a calendar year (GEDTS, 1999, p. 4).

In 1997, 36 jurisdictions were required to raise their passing standards to meet the minimum levels set by GEDTS (GEDTS, 1999, p. 6). The passing rate that year (1997) was lower. The passing percent in 1997 was 68.6 compared to 70.9 percent in 1998 and 71.7 percent in 1996 (GEDTS, 1999, p. 28).

Age

The 1980 survey reported that 78 percent of those who earned credentials were under age 29. At that time, as many as 50 percent of candidates were age 21 or younger. In information gathered in the 1989 survey, 62 percent of GED candidates were 25 years or younger, 29 percent were ages 18 or 19, and 22 percent were ages 25 - 34. Only 16 percent were 35 years or older.

The 1989 survey considered age-by-gender groups; the largest group was men ages 18 and 19 (15 percent) followed by women ages 25 to 34 (14 percent). As noted in the 1989 report, census figures showed that 39 million people, age 25 or older, did not have high school diplomas. Only an estimated one percent of those 39 million took the GED Tests in 1989. That number was larger in younger groups, among the 4.3 million 16 to 24 year olds without diplomas and not in school about nine percent took the GED Tests (Swartz, et al., 1985, no. 7, p. 2). The study concluded, “while dropout recovery efforts based on the GED Tests may be strong for younger adults, they are reaching a relatively small portion of older adults who have no high school diploma” (Swartz, et al., 1985, no. 7, p. 1). In 1989, “of men candidates, 71 percent were younger than 25 years of age, 19

percent were between the ages of 25 and 34, and 10 per cent were 35 or older. . . . Of women candidates, 54 percent were younger than 25 years of age, 25 percent were between the ages of 25 and 34, and 21 percent were 35 or older”(Swartz, et al., 1985, no. 6, p. 2). The median age for women was 23 years and for men 20 years.

The 1989 survey also reported that the number of full-time employed candidates increased with age and was highest in the middle age group. While only 53 percent of those aged 17 or younger worked full time, 81 percent of those ages 45 to 54 and 74 percent of those aged 55 and older did (Baldwin & Spille, 1991, p. 3).

“In a study of the test performance of the surveyed candidates, age made little difference in average scores on each test. An exception was the higher average score of candidates ages 45 to 54 on the Test of Interpreting Literature and the Arts”(Swartz, et al., 1985, no. 7, p. 3). Even though older test-takers, aged 35 or older, have completed fewer years of formal school, they perform about as well as younger candidates (Swartz, et al., 1985, no. 7, p. 3).

The 1998 statistical report gives the average age of GED test-takers as 24.2. Approximately 55 percent of U.S. adults earning GED credentials are ages 18 to 24 (GEDTS, 1999, p. 7).

Race

Among 1980 candidates, 79 percent were white, 18 percent were black, and 3 percent were members of other races. The 1989 survey states:

The composition of minority GED candidates changed. The proportion of Hispanic candidates increased from 6.8% in 1980 to 11.2 % in 1989, while the

percentage of Black candidates fell from 17.1% in 1980 to 14.2% in 1989.

Minority adults continued to be more highly represented among GED candidates (about 29.5% in both 1980 and 1989) than in the general U.S. population of adults 18 and older (18.2% in 1980 and 21.2% in 1988). The proportions of White GED candidates (about 70.5%) and minority GED candidates (about 29.5%) remained the same. (Baldwin, 1990, p. 3).

Separating those percentages by age group showed that the highest percentage of minorities was in the age group 18 to 24 at 31 percent. Only about 26 percent of candidates aged 17 and younger were minorities and even fewer, 20 percent, of those aged 45 to 54 and only 9 percent of those over age 55 were (Baldwin, 1990, p. 3).

In the 1989 survey, race seemed to make a difference in the number of school grades completed. A higher percentage of minority candidates, 87 percent of Asian/Pacific Islander candidates and 79 percent of Black candidates compared to 68 percent of Whites reported having completed tenth grade or higher (Baldwin, 1991, no. 2, p. 4).

Gender

The majority of those testing in 1980 were female (58 percent). However, the 1989 survey noted that “in general, men and women candidates are nearly equally represented among ages younger than 25. In age groups 25 and older, women outnumber men. Moreover, the proportion of women to men increases by age group” (Kroll & Baldwin, 1994, p. 4). The proportion of women is dramatically larger in the over 35 age group. There were 71 percent women ages 35 – 44, 73 percent women ages 45 –54, and 71

percent ages 55 and older. The 1989 survey found that 56 percent of the total candidates were women—compared to 52 percent of the general population (Hayes & Baldwin, 1993, p. 2).

The 1989 survey collected information on characteristics of candidates by gender. Most men ages 18 to 19 (the earlier identified largest group) were unmarried and lived in households without children. The majority of those men were employed or actively seeking employment; very few received any welfare. Among the men, 32 percent said that they left high school because they had become disengaged from school. Among the largest group of women (ages 25 to 34), about half were unmarried and 32 percent were in a household with three or more children. Many of those women (29 percent) were the heads of the household. The main reason these women left high school (40 percent) was pregnancy or marriage. The majority of women were employed or seeking employment.

The type of household also differed by gender. “Women candidates are far more likely to share a household with children – which can limit their ability to participate in formal classes or to study at home or elsewhere” (Hayes & Baldwin, 1993, p. 1). While only 7 percent of men were divorced, separated, or widowed, 20 percent of women were again single (Hayes & Baldwin, 1993, p. 3). Half of the men candidates (50 percent) were part of households that included other adults. Only about one third (37 percent) of the women had households with other adults. “Women were more likely (36 percent) than men (26 percent) to report annual household incomes of less than \$10,000. By contrast, men were nearly twice as likely (18 percent) as women (10 percent) to report annual household incomes of more than \$40,000” (Hayes & Baldwin, 1993, p. 1). Thus,

women were more likely to head single family households with low incomes and children.

Birthplace

The majority, 93 percent of the 1980 test-takers, of GED candidates were born in the United States.

Current or Most Recent Job

According to the 1980 survey, about 20 percent of candidates worked in service jobs, about 14 percent were laborers, 12 percent operatives, and another 14 percent homemakers. “It was estimated that employed GED examinees are only about half as likely to be in white collar occupations as compared with the general U.S. population aged 16 years old and over” (Baldwin, 1990, p. 7). Of those testing in 1980, 80 percent were currently employed or had been at the time that they took the tests. Only 5.5 percent of the test-takers had never worked.

In the 1989 survey, “the jobs of most candidates (61 percent) fell into the following three general categories: sales, administrative support, and technical occupations (24 percent); laborers, machine operators, and transportation (20 percent); and service occupations (17 percent). Six percent of candidates reported they were homemakers and 4 percent reported they had never worked” (Baldwin & Spille, 1991, p. 5).

More men were employed (59 percent) than women (47 percent) at the time they took the GED Tests. Men candidates were more likely than women to work full time. About 80 percent of men reported working full time compared to 67 percent of women

(Hayes & Baldwin, 1993, p. 5). Many women had reasons for not working. “The reason most frequently reported by women for not seeking employment was home and family responsibilities. More than half of women (53 percent) reported these reasons, compared to 6 percent of men” (Hayes & Baldwin, 1993, p. 5). Only 44 percent of the U.S. civilian workforce of dropouts were employed or seeking a job compared to 80 percent of GED candidates in 1989 (Baldwin & Spille, 1991, p. 2). About 73 percent of employed candidates worked full time, 21 percent worked 15 to 34 hours per week, and only 5 percent worked fewer than 15 hours (Baldwin & Spille, 1991, p. 3). “Employed Black and Asian/Pacific Islander candidates (about 35 percent) were more likely than White or Hispanic candidates (about 25 percent) to work part time”(Baldwin & Spille, 1991, p. 3).

Earnings

The majority of GED candidates are in lower income brackets. Lower earnings are particularly true for groups of women and minority races. In 1989, more than one in ten candidates (13 percent) reported annual household incomes of more than \$40,000. Three in ten candidates (29 percent) reported annual household incomes between \$20,000 to \$40,000. More than one in four candidates (26 percent) reported annual household incomes between \$10,000 and \$20,000. Nearly one in three candidates (32 percent) reported annual household incomes of less than \$10,000. Nearly one in five men candidates (18 percent) and one in ten women candidates (10 percent) reported annual household incomes of more than \$40,000. More than one in three women candidates (36 percent) and one in four men candidates (26 percent) reported annual household incomes of

less than \$10,000. Forty percent of Hispanic candidates, 43 percent of Black candidates, 31 percent of Asian/Pacific Islander candidates, 28 percent of White candidates, and 50 percent of candidates of other race groups reported annual household incomes of less than \$10,000 in 1989 (Baldwin & Spille, 1991, p. 5).

Language

When questioned, nearly 92 percent of those who took the GED Tests in 1980 said that they spoke English between the ages of six and thirteen. Recently, the number of candidates taking the Spanish-language edition of the GED Tests has increased substantially (over a 50 percent increase in numbers in the decade from 1980 to 1989). GEDTS has now produced and released a Spanish translation of the English-language version of the GED Tests (GEDTS, 1990, p. iii).

Highest Grade Completed

The majority of GED candidates had completed tenth grade when they took the Tests. The 1980 survey reported 88 percent of candidates completed ninth grade, 70 percent tenth grade, and 37 percent eleventh grade or higher. The 1989 survey reported that younger candidates generally reported completing more schooling. Among candidates aged 18 to 24 years, 47 percent had completed eleventh grade or higher compared to only 25 percent of candidates age 45 and older (Kroll & Baldwin, 1994, p. 3). Gender also made a difference. While 72 percent of men completed tenth grade or higher, only 68 percent of women did (Baldwin, 1991, no. 2, p. 4).

The 1998 statistical report indicated that, again, about 67.1 percent of GED candidates reported completing tenth grade or higher and 37.4 percent completed eleventh grade or higher (GEDTS, 1999, p 7).

Grades in School

The majority of those polled in the 1980 survey reported having grades of “B” or “C.” Only 11 percent of those surveyed had average grades of “B+”; on the other end, only 23 percent reported an average of “C-“. The 1980 graduating seniors reported higher grades than those reported by the 1980 GED examinees (Malizio & Whitney, 1982, p. 3). “About 33% of the graduating high school seniors reported grades of ‘mostly A,’ or ‘half B and half C’, 19% reported grades of ‘mostly C’ or ‘half C and half D’, while approximately 1% reported grades ‘mostly D or below’” (Malizio & Whitney, 1982, p. 3). In the 1989 survey “11% of the GED examinees reported grades of ‘mostly A’ or ‘half A and half B’, 41% ‘mostly B’ or ‘half B and half C’, 42% ‘mostly C’ or ‘half C and half D’, and 7% ‘mostly D and below’” (Malizio & Whitney, 1982, p. 3).

The 1989 survey reported that gender made a difference in grades reported. While 80 percent of women candidates reported grades of C or better, only 67 percent of men did (Hayes & Baldwin, 1993, p. 4). Different age and race groups showed grade differences. Older age groups reported higher grades than younger groups (Baldwin, 1991, no.2, p. 1). According to the 1989 survey, “Asian candidates (84 percent), Black candidates (82 percent), and Hispanic candidates (78 percent) were more likely than White candidates (72 percent) to report in-school grades of ‘mostly C’ or better” (Baldwin, 1991, no. 2, p. 5).

Major Reason for Not Completing High School

The 1980 survey also asked candidates about their reasons for not completing high school. “About 41% of the candidates cited personal reasons . . . for not completing high school. Further, about 20% said that they needed to work, while another 13% attributed their not having completed high school to poor or unsatisfactory academic progress” (Baldwin, 1990, p. 9). Men generally stayed in school longer than women did. About 43 percent of the men finished eleventh grade or higher but only 35 percent of women did (Hayes & Baldwin, 1993, p. 4).

“The largest percentage of candidates in both 1980 (40.8%) and 1989 (34.7%) cited personal reasons as the most important in not completing high school. The percentage of GED Candidates who reported having left school due to pregnancy or marriage tripled. In 1989, one in five adults taking the GED Tests (19.7 %) cited this reason as the most important. Of these, about nine in ten are women” (Baldwin, 1990, p 4).

In the 1989 survey, candidates’ “reasons for not completing high school fell into seven distinct categories: Disengagement from School; Marriage or Pregnancy; Home and Family Problems; Employment-Related Reasons; Social Behavior Problems; Shortcomings of the School and Academic Problems” (Baldwin, 1991, no. 4, p. 1). Personal problems no longer seemed to top the list in 1989. Instead, disengagement from school and employment reasons were most important (Baldwin, 1991, no. 4, p. 1). The percent of candidates who left school because they were not doing well in classes dropped from 13.1% in 1980 to 6.4% in 1989 (Baldwin, 1991, no.2, p. 4).

Reason for Taking the GED Tests

Most GED candidates report taking the GED Tests for job-related reasons. The percentage in the 1980 survey was 39. Additional reasons for taking the test include the pursuit of additional education or training and for personal satisfaction. In the 1989 survey, almost half (45 percent) of all GED candidates (especially younger candidates) took the GED Tests to be able to enroll in a college or university (Kroll & Baldwin, 1994, p. 1). The reason for taking the GED tests varied with age. Approximately 41 percent of 17 year olds and younger took the tests to gain admission to a postsecondary education or training program while only 10 percent of those 55 and older identified that reason as most important (Kroll & Baldwin, 1994, p. 4). Taking the GED Tests to feel better about themselves or to be better educated was more appealing with age, “from a low of 21 percent of candidates 17 and under to a high of 58 percent of candidates 55 and over” (Kroll & Baldwin, 1994, p. 5). Gender also affected the reasons selected. In the 1989 survey, 25 percent of women contrasted with 17 percent of men indicated wanting to feel better about themselves as the most important reason for taking the tests (Hayes & Baldwin, 1993, p. 7).

In response to the 1989 survey, about 200,000 adults, or 33 percent of candidates said they took the GED Tests primarily to meet educational admissions requirements (Baldwin, 1990, p. 1). Of that group seeking educational admission, 31 percent planned to enroll in a technical, trade, or vocational school in the next year, 11 percent planned to enroll in a four-year college or university, and 14 percent planned to take on-the-job training (Baldwin & Spille, 1991, no. 3, p. 7).

The most recent count in 1998 showed that “two of every three (67.7 percent) U.S. . . . adults reported that they took the GED Tests for reasons related to further education (e.g. entering college or trade school)” (GEDTS, 1999, p. 7). That percentage (67.7 percent) is more than double the number in 1963 (33 percent) (GEDTS, 1999, p. 28). So, while postsecondary education is the main reason for most GED candidates to take the test, employment is still an important consideration in the 1998 report. About 29 percent of candidates wanted to earn GED credentials for better employment opportunities” (GEDTS, 1999, p. 23).

Preparation for the Tests

While only 20 percent of the 1980 candidates attended review classes in all five areas, about 40 percent attended a class for math preparation. Only 20 percent of the 1980 examinees did not prepare in any way for the GED Tests. The 1989 survey reported that older candidates aged 55 and older were more likely to attend preparation classes (Kroll & Baldwin, 1994, p. 3). Regardless of age or gender, most candidates (84 percent) studied in some way before taking the GED Tests (Hayes & Baldwin, 1993, p. 3). Women were more likely than men to study; Blacks and Hispanics were more likely than Whites or Asian/Pacific Islanders to study.

Methods of Preparation

About 40 percent of all age groups attended GED review classes as their methods of preparation. The second most widely used form of preparation was using a GED book or manual followed by using GED practice tests. The least number of candidates who prepared said that they used a GED tutor.

Amount of Preparation Time

Examinees interviewed in 1980 typically spent about 20 hours in test preparation (Baldwin, 1990, p. 10). The 1989 survey reported a 50percent increase in preparation time (Baldwin, 1990, p. 1). In 1980 candidates had reported 20 hours of study compared to 30 hours reported in 1990.

Cost of Preparation

“For most examinees, the expenditures reported for preparation were modest. Considering both direct costs and lost wages, the typical examinee spent only about \$10 – \$12” (Baldwin, 1990, p. 11).

Reading Habits

According to the 1980 survey, most candidates (90percent) read newspapers, magazines, or books at least once each week (Baldwin, 1990, p. 12). The level of literacy of GED candidates was positively correlated with the rate of passing.

In 1993 the American Council on Education conducted a study comparing performance on the NALS (National Adult Literacy Survey) and the GED Tests. In general they determined that “higher scores on the GED Tests correspond to higher scores on the NALS literacy assessments. As expected, individuals who met their state’s

GED score requirements for a high school credential . . . displayed far stronger prose, document, and quantitative literacy skills, on average, than those who did not pass the GED Tests” (Baldwin, Kirsch, Rock, Yamatoto, 1995, p. xii). Further, “the probability of passing the GED Tests rose for each increase in demonstrated level of literacy. . . . These findings indicate a strong relationship between literacy attainment and performance on the GED test battery” (Baldwin, et al., 1995, p. xiii). Not only does the level of literacy help predict GED success, but GED success also helps predict success in literary proficiency. In general, demographics do not affect passing rates. However, “some differences in performance were found among various demographic groups. . . . On Average, white GED examinees displayed stronger literacy skills than Hispanic examinees, who displayed stronger literacy skills than African American examinees” (Baldwin, et al., 1995, p. xiii). Somewhat surprisingly, those who tended to prepare formally for the tests had lower literacy levels than those who did not study or just took the GED Practice tests. “These findings suggest that individuals with limited literacy skills are more likely to seek out or be referred to basic skills programs and are more likely to enroll in formal classes to prepare for the GED Tests than those with stronger skills” (Baldwin, et al., 1995, p. xiv). There was a difference in literary proficiency among candidates depending on future plans. Those planning for college displayed a stronger proficiency than those pursuing vocational or no additional education (Baldwin, et al., 1995, p. xiv). Helping to validate the emphasis on skills learned in the world of work, the study found that employed candidates – whether full or part time – scored

better than those who were unemployed (Baldwin, et al., 1995, p. xiv). (See Figure 1.3 at the very end of this section for a summary.)

Future Plans

When asked in the 1980 survey, 68 percent of GED candidates said they planned to enter a college, university, or trade, technical, or business school after receiving the credential. Completion of the GED not only allowed graduates to enter postsecondary study, but receiving a GED credential increased self-esteem (Hayes, 1991; Iowa Department of Education, 1992). “For many, the GED diploma stands as a symbol that they can overcome the obstacles in their lives that had previously prevented them from completing school” (Kroll & Baldwin, 1994, p. 6).

Disabilities

The number of candidates with disabilities has been steadily increasing. “Seven percent of candidates surveyed in 1989 reported having a disability. People with disabilities are more likely than others to be high school dropouts and thus could benefit from the GED Tests” (Baldwin, 1991, no. 2, p. 1). Disabilities were more evident in older age groups. Among the 55 and older group, 17 percent reported disabilities compared to only 3 percent of those aged 17 and younger (Baldwin, 1991 ,no 2, p. 3). When the type of disability was noted,

one in five disabled candidates reported having a “specific learning disability” (19 percent). The same proportion reported having an “orthopedic handicap” (28 percent). One in three (33 percent) specified “other health impairment.” More than one in eight disabled candidates reported they were “hard of hearing” (13

percent), while about one in 10 reported having an “emotional disability” (11 percent) or a “visual handicap (not correctable by glasses)” (9 percent). Four percent reported having a “speech disability” and two percent reported “deafness” (Baldwin, 1991, no 2, p. 3).

Considering the percentage of candidates with disabilities, surprisingly only 3,200 of the 43,000 candidates reporting disabilities requested special editions of the GED Tests (Braille, large print, or audio cassette) or special accommodations in testing procedures (Baldwin, 1991, no 2, p. 3). While there is a larger percentage of disabled students in the general population, there is a higher percentage of GED graduates among the disabled. “A recent study by the National Center for Education Statistics indicated that 10 percent of the 12.5 million postsecondary students in fall 1986 reported having at least one disabling condition. This study found that 8 percent of disabled postsecondary students were GED graduates, while 4 percent of nondisabled postsecondary students held GED diplomas” (Baldwin, 1991, no 2, p. 3).

Recognition of learning disabilities led GEDTS to allow accommodations in the GED testing. The number of candidates using accommodations has continued to increase.

While the number of adults attempting to earn a GED has remained somewhat constant over the past decade (about 800,000 annually), the composition of this community has expanded. Since 1988, the GED Testing Service (GEDTS) has used a system for granting accommodations to adults with documented specific learning disabilities and to candidates with physical and emotional disabilities. The challenge is to remove barriers associated with standard test administration

while maintaining the same passing standard for earning a GED high school credential. During the past ten years, GEDTS has made progress. The number of adults taking special editions (e.g. audiocassette and Braille) of the GED Tests has more than doubled (1,169 in 1989 to 2,503 in 1998) (GEDTS, 1999, p. ii).

GEDTS is developing a revised application form and model for accommodation requests.

“While the number of requests for specific learning disability accommodations decreased in 1998, the number of adults taking special editions of the tests increased by nearly 9 percent. In addition there was a 7 percent increase in the number of special accommodations (e.g. extended time, reading device, and answer marking) granted for physical and emotional disabilities” (GEDTS, 1999, p. iii). Appropriate accommodations may allow more disabled students to obtain GED credentials.

Retesters

“About 15 percent of the adults taking the tests did not earn a credential in prior years and were retested to obtain their GED high school credential” (GEDTS, 1990, p. 11).

General Education Development Tests Curricula

Candidates' Study Patterns

“Most candidates (84 percent) chose to study before taking the GED Tests. This percentage represented 515,000 candidates in 1989. Candidates’ choices of study methods included formal instruction – such as GED review classes or learning center – as well as studying from a GED book or manual, taking the Official GED Practice Tests, working with a tutor, or some other method” (Baldwin, 1991, no 2, p. 5). Gender and age groupings showed different study habits. While only 80 percent of men studied for the tests, 87 percent of women did (Baldwin, 1991, no 2, p. 5). And while only 80 percent of younger candidates (aged 24 and younger) reported studying, 90 percent of older candidates studied in some way (Baldwin, 1991, no 2, p. 5). “Of candidates who studied for the GED tests in 1989, one in three (34 percent), or an estimated 175,000 candidates, reported they attended GED review classes. . . . About one in four candidates (25 percent), or 127,000 adults, studied from a book or manual designed for GED study” (Baldwin, 1991, no 2, p. 5). Approximately 12 percent or 60,000 adults attended a learning center (Baldwin, 1991, no 2, p. 5). Another 18 percent or 92,000 adults used the Official GED Practice Tests in 1989. Twelve percent selected other methods such as working with a tutor, watching televised GED study programs, studying with a family member or friend, or talking with someone who had taken the tests (Baldwin, 1991, no 2, p. 5).

Formal instruction at a learning center or a review class helped prepare 46 percent of candidates who studied (Baldwin, 1991, no 2, p. 6). However, only 25 percent of

those enrolled in classes actually took tests (Baldwin, 1991, no 2, p. 5). “In 1975 the General Educational Performance Index (GEPI) was developed to determine whether a candidate is likely to pass the GED Test. In 1970 the Official GED Practice Tests (PGED) were introduced by the General Educational Development Testing Service (GEDTS) to serve the same purpose”(Musgrove, 1981, p. 1)

“The results of this study suggest that the PGED is a valid predictor of future performance on the GED. The GEPI study showed that the test could also be used reliably to predict GED scores” (Musgrove, 1981, p. 1). The differences in the average scores on the PGED and the GED tests were small. They ranged from low of .07 between the 48.34 average on the Social Studies PGED and the 48.34 on the Social Studies GED to a high of 1.68 between the 48.03 on the Science PGED and 49.71 on the Science GED.

Because of the number of candidates that are studying and the length of time they are using to prepare, choosing appropriate GED study materials is increasingly important. “The percentage of candidates who reported studying for the GED Tests increased from 79.5% to 83.8%. The average number of hours adults reported having studied for the GED tests increased from 20.0 in 1980 to 30.5 in 1989, an increase of 50%. The percentage of candidates who reported studying over 100 hours more than doubled, from 11.8% in 1980 to 24.2 % in 1989” (Baldwin, 1990, p. 2).

GED Study Materials

GEDTS provides official practice tests developed by ACE for GED studying; they can be ordered for a cost from “The Learning Line.” The “Information Bulletin on the Tests of General Educational Development” is free from ACE. The bulletin contains

sample questions with correct answers and explanations for each of the five tests. It also contains general test-taking tips. This same information is available at their website, <http://www.acenet.edu/calec/ged/sampQ.html>.

There are three main manufacturers of written GED study materials. Barron's Educational Series, Inc. of Woodbury, New York provides TV programs and book materials. The book materials are organized into lessons that provide a "careful step-by-step review" (Hockett, 1978, p. vii). Topics are presented with step-by-step illustrative examples. A practice book includes a diagnostic test, practice exercises with answers, and practice tests (Hockett, 1978, p. vii). Steck-Vaughn Company in Austin, Texas provides practice materials that are centered around practice exercises with answers and explanations. Their written materials also include a pretest. They also offer Pre-GED materials. The third well-known preparer of GED study materials is Contemporary Books a division of NTC/Contemporary Publishing Group in Lincolnwood, Illinois. Their materials are designed similarly to those of Steck-Vaughn. They also offer Pre-GED materials for those students who need to build essential skills before beginning formal GED practice. Most of these materials are available at the public library and at bookstores.

GED instruction is also available on the Web. One source is from an educational computer curriculum service called NovaNET Learning, Inc. at www.novanet.com/gedlang.html. Another Basic Education / GED instruction program is offered by Online Training, Inc. at www.oltraining.com/be.html. Each module, one for each test, of the Online Training material costs \$150 or all five for \$600. The Online Training set-up offers an instructor online to assist and a "chat" opportunity with other

users. However, the cost of the program is significantly higher than the average \$10 spent by GED candidates.

All of the published GED preparation materials have the same design – pretest, practice exercises, post or practice test. The standard GED preparation curriculum tends to have students take practice tests over and over until they can score high enough on them to ensure passing. Steck-Vaughn has five different versions of the Tests so that students may practice five times before taking the GED Tests. Few classes have a prescribed curriculum to teach students the knowledge base needed. Students identify weak areas (through missed objectives on the practice test) and try to resolve those weaknesses with an instructor or on their own. The published practice books do provide some explanations for correct answers to questions, but the instruction is very limited. If students are reviewing material previously presented and learned in high school, these practice techniques may provide adequate preparation in the form of review. However, students lacking instruction in an area may be without a method to resolve the deficiency.

CHAPTER 3

METHODOLOGY OF RESEARCH

Setting of the Study

Research was conducted using students and programs in place in the Garland Independent School District. Garland is a northeast suburb of Dallas, Texas. The Garland Independent School District has an enrollment of approximately 51,000 students and includes six comprehensive (5A) high schools (grades 9 –12 with an enrollment of over 2,000 students), one choice alternative night high school, and one alternative discipline high school. Each high school has a GED instruction program in place on its campus. The population included all students enrolled in GED instruction in GISD during the 1999-2000 school year. The study sample groups were three, naturally occurring, in-place groups. The first sample group was from one of the comprehensive high schools and used a traditional preparation method with commercially prepared materials and was labeled as “traditional.” The second study group was from the alternative night high school and used test / retest of the official GED practice tests as its preparation method and was labeled “test/retest.” The third study group was from a weekend program at the discipline alternative school using computer-based instruction and was labeled “computer-assisted.”

Population and Samples

The statistical study population included all students enrolled in a Garland Independent School District GED preparation program during the school year 1999 –

2000 from August 9, 1999, through May 23, 2000, and is hereafter referred to as the “district population.” The study groups were naturally occurring groups in three different locations with three different methods of instruction. Students in the district were free to choose any of the three programs offered and to move between groups. Students in the study sample groups ranged in age from 15 to 21 years (age as of 09/01/99). The majority of students were 17 years of age.

The compulsory attendance law in Texas applies to students until completion of the school year in which they turn 18. In order to take the GED tests, students under the age of 18 are required to have parental permission and either show proof that they are withdrawn from school or are participating in GED instruction. Students aged 17 and younger also need parental permission to enroll in a GED instruction program. Students 18 years old and older may test without any instruction and do not need parental permission. Students aged 16 years and younger are only allowed to enroll in instruction and to test if they have been court-ordered to do so. There were a limited number of 15 and 16 year olds in the groups. There were also a limited number of students over age 18. Many students over the age of 18 choose instruction programs designed for adults and offered in the community rather than those offered in the regular school program.

Dropouts

According to TEA (Texas Education Agency), “a student is identified as a dropout if the individual is absent without an approved excuse or documented transfer and does not return to school by the fall of the following year, or if he or she completed

the school year but fails to re-enroll the following school year” (Source: TEA, 1997-98 Report on Public School Dropouts, Texas Education Agency). Further, students who:

- Enter the military before graduation
- Leave school and enter a program not qualifying as an elementary/secondary school (e.g., cosmetology school)
- Are migrants or whose whereabouts are unknown
- Leave school from special education, ungraded, or alternative education programs

are counted as dropouts by TEA in the Public Education Information Management System (PEIMS) accounting. The Annual Dropout Rate is calculated as follows:

number of students who dropped out during the school year
number of students who were in membership at any time during the school year.

(AEIS glossary page 9, October 1999). Thus, the Annual Dropout Rate used a cumulative count. The Longitudinal or Actual Dropout Rate was “calculated by following the class (cohort) of students who began 7th grade in 1992-93 through their expected graduation ‘estimated’ rate previously reported. . . . It is based on six years of PEIMS data collected at the individual student level. The rate is calculated by counting all the students in the cohort whose final status in PEIMS is as a dropout, and dividing that number by the final number of students in the cohort after six years.” (AEIS glossary page 9, October 1999).

The dropout rate for Texas school districts is calculated for students in grades 7 – 12. In calculating districts’ accountability ratings, the Texas Education Agency (TEA) expects exemplary districts to have a dropout rate of 1.0 percent or less for all students and each student subgroup (African American, Hispanic, White, and Economically

Disadvantaged); recognized districts to have a rate of 3.5 percent or less for all students and each subgroup; and acceptable campuses to have a rate of 6.0 percent or less for all students and each subgroup. The last reported information released by TEA was for the school year 1997-98 and lists the following dropout information for GISD:

TABLE 3.1

GISD DROPOUTS

| <u>Student Groups</u> | <u>Number of Dropouts</u> | <u>Cumulative Membership</u> | <u>Student Group Percent</u> | <u>Dropout Rate</u> |
|----------------------------|---------------------------|------------------------------|------------------------------|---------------------|
| All students | 131 | 20,949 | 100.0% | 0.6% |
| African American | 28 | 3,468 | 16.6% | 0.8% |
| Hispanic | 43 | 4,157 | 19.8% | 1.0% |
| White | 52 | 11,994 | 57.3% | 0.4% |
| Economically Disadvantaged | 31 | 4,448 | 21.2% | 0.7% |

All dropout areas in GISD showed a decline from the 1996-97 rates. The rate for all students was down from 0.8 percent to 0.6 percent; African Americans from 1.0 percent to 0.8 percent; Hispanics from 1.4 percent to 1.0 percent; Whites from 0.6 percent to 0.4 percent; Economically Disadvantaged from 1.0 percent to 0.7 percent.

History and Purpose of GED Instruction in GISD

Information regarding the history and development of the GED instruction programs in GISD was obtained in interviews with Dr. Deborah Cron, Assistant Superintendent for Educational Operations, and Mr. Jerry Halpin, Director of Pupil

Personnel. Mr. Halpin reported that the GED initiative was begun as a result of a state mandate in 1990. At that time, the dropout rate in GISD was 4.1 percent. Any districts with dropout rates over 3.9 percent were mandated to create a program to reduce dropouts. Senate Bill 417 specified that the Central Education Agency is to request that “at least those districts with dropout rates in the top 25 percent of all districts’ participate in the Equivalency Examination Pilot Program and that a school district shall participate if requested to do so by the Central Education Agency. . . . The determination of districts required to participate in the Equivalency Examination Pilot Program will be made annually.” (Information Memo from TEA dated November 29, 1990) The Senate bill mandated the program outlined in the TEA memo as, “an alternative for certain at-risk students who are credit deficient and, therefore, overage for grade. Students must not have a reasonable expectation of earning a diploma of high school graduation within four years of entrance to the ninth grade.” The memo described the target participants for the program: “this pilot program is not intended as an alternative for at-risk students who are severely deficient in basic skills. Students must reasonably be expected to pass the high school equivalency examination upon completion of a program. In making this determination, districts are to use multiple assessment criteria, including current achievement data and individual performance profiles.”

At the time when these mandates were issued by the legislature, each school district used its own method to calculate dropout rate, and such methods were missing many of the dropouts. GISD had thought that its dropout rate was 2-3 percent but when PEIMS began keeping track of dropout data, the state calculated GISD’s dropout rate as

4.1 percent. GISD wrote a proposal for a state grant to begin a GED pilot program in two of its high schools. The pilot program was so well received in the two schools where it was tried that it was expanded to include all of the district's high schools the following year. When the program was begun, students had to earn the right to participate with good attendance and good behavior. It was noted, however, that the students who really needed the program were being excluded. The program was amended to reach students who were behind in credits and likely to drop out. The pilot program was designed as 90 minutes a day for five days a week of GED instruction with the other 5 ½ hours of the school day including regular classes and activities – for a total of seven hours -- just like regular school. After the first few years, it was altered to be a half-day program so that students could study for the GED tests part of the day and work the rest of the day.

Research Questions

The following research questions were considered in gathering and analyzing data.

1. What is the relationship between the preparation methods used and the passing rate of students?

The percentages of students who enrolled, took GED tests, and passed GED tests in the total district population and in each study sample group were calculated and compared.

2. What is the relationship between total preparation time (measured as the amount of time students were enrolled in preparation programs) and passing rate?

The relationship between enrollment time and passing rate was examined for correlation.

3. What is the relationship between the number of student withdrawals from the preparation program (measured as students who did not complete instruction and test -- dropouts) and the preparation method used?

The success of the preparation methods as measured by the number of students who completed instruction was compared using a chi square table.

4. What are the characteristics of GED students?

Frequencies and percentages for the entire district population were calculated for: ethnicity, gender, home language, special education served, gifted and talented served, economically disadvantaged, at risk identified, grade level, age, U.S. born, number of credits obtained, and GPA. Mean analyses were made on the above data when numeric. IQ (Intelligence Quotient) data and literacy data (based on performance on the Iowa Tests of Basic Skills or ITBS reading test) were tested for correlation with cumulative GED scores for students whose data were available.

5. What are the characteristics of GED graduates (those who pass all tests with high enough scores to receive GED credentials)?

The same characteristics that were measured in the entire district population were measured for those identified as “passers” or GED graduates in the study population. Characteristics were also compared for the total group of students who tested and may or may not have received a GED credential, labeled as district “testers” or GED candidates. It appeared that there might be differences between students who tested at all (candidates) and those who did not begin testing (dropouts) as well as between those who passed (graduates) and those who tested but did not pass (candidates).

6. Is there a correlation between literacy rate (ITBS reading score) and the cumulative GED score?

A Pearson Correlation Coefficient was calculated for district “testers,” candidates for whom ITBS data were available comparing ITBS reading scores and GED cumulative score.

7. Is there a correlation between the number of high school courses completed by a student and the cumulative GED score?

A Pearson Correlation Coefficient was calculated for the two characteristics of the district “testers” or candidates.

8. Is there a correlation between a student’s IQ and the cumulative GED score?

A Pearson Correlation Coefficient was calculated for the two characteristics of the district “testers” or candidates.

9. Is there a correlation between a student’s high school GPA and the cumulative GED score?

A Pearson Correlation Coefficient was calculated for the two characteristics of the district “testers” or candidates.

10. Is there a relationship between passing all exit TAAS tests and passing the GED Tests?

The percentage of TAAS graduates (those students who passed all three exit level TAAS tests) in the group of “passers” or GED graduates was compared to the percentage of those in the “nonpassers.”

11. Is there a correlation between a student's exit TAAS math score and GED math test score?

A Pearson Correlation Coefficient was calculated for the two characteristics of the district "testers" or candidates.

12. Is there a correlation between a student's exit TAAS reading test score and the GED literature and the arts test score?

A Pearson Correlation Coefficient was calculated for the two characteristics of the district "testers" or candidates.

13. Is there a correlation between a student's exit TAAS writing test score and the GED writing test score?

A Pearson Correlation Coefficient was calculated for the two characteristics of the district "testers" or candidates.

14. Is there a correlation between a student's eighth grade TAAS science score and the GED science score?

A Pearson Correlation Coefficient was calculated for the two characteristics of the district "testers" or candidates.

15. Is there a correlation between a student's eighth grade TAAS social studies score and the GED social studies score?

A Pearson Correlation Coefficient was calculated for the two characteristics of the district "testers" or candidates.

Hypotheses

The primary hypothesis to be tested was:

H1: There is no significant difference in the passing rates of GISD students using computer-based instruction and those using traditional instructions.

Additional hypotheses related to the primary hypothesis were:

H1A: There is no significant difference in the passing rates of GISD students at the different locations.

H1B: There is no significant difference in the percentage of nontesters or dropouts at the different locations.

H1C: There is no correlation between the hours spent in preparation classes (measured as the number of days enrolled in preparation classes) and the passing rate of students.

The secondary hypothesis was:

H2: There is no significant relationship between certain student characteristics and GED tests success. The student characteristics considered were:

Gender

Ethnicity

Age

Home Language

U.S. Born

Identified as “LEP” (Limited English Proficiency)

Identified “At-Risk”

Identified “Economically Disadvantaged”

Identified for Special Education Services

Identified as “Gifted / Talented”

TAAS Scores

IQ (based on CogAT test)

ITBS (Iowa Tests of Basic Skills) Reading score

High School Credits Earned

High School GPA

Attendance (number of unexcused or unknown absences)

Length of Enrollment (number of days)

Related hypotheses were:

H2A: There is no significant relationship between student literacy as measured on the ITBS reading test and GED cumulative test scores.

H2B: There is no significant relationship between the number of high school courses completed (credits) and cumulative GED test scores.

H2C: There is no significant relationship between student IQ scores and cumulative GED test scores.

H2D: There is no significant relationship between a student's high school GPA and cumulative GED test scores.

H2E: There is no relationship between a student passing all TAAS tests and passing the GED tests.

H2F: There is no significant relationship between a student's exit TAAS math test score and GED math test score.

H2G: There is no significant relationship between a student's exit TAAS reading test score and GED literature and the arts test score.

H2H: There is no significant relationship between a student's exit TAAS writing score and GED writing test score.

H2I: There is no significant relationship between a student's eighth grade TAAS science score and GED science test score.

H2J: There is no significant relationship between a student's eighth grade TAAS social studies score and GED social studies score.

Limitations of the Study

The main limitation of the study was trying to evaluate all the variables that might affect a student's GED tests performance. There may be other factors than those monitored, not easily measurable, which affect the passing rate of students, i.e., teacher involvement. In addition, the study considered only high school students aged 15 – 22, not all students, e.g., adults, who prepare for the GED Tests.

Definition of Terms

1. GISD: Garland Independent School District: Suburban district outside of Dallas, Texas where study was conducted.
2. CAI: Computer Assisted Instruction
3. PEIMS: Public Education Information Management System

Tests and Associated Terms

4. GED: General Education Development
5. GEDTS: General Education Development Testing Service
6. GED Tests: A battery of five norm-referenced tests in the areas of social studies, science, mathematics, writing, and literature.
7. GED student/ Nontester: Student who participated in GED instruction but did not take any part of the actual GED tests.
8. GED candidate / Tester: Student preparing for GED tests who has taken some or passed some but not all the tests.

9. GED graduate / Passer: Student who has taken and passed all parts of the GED examination and received a high enough cumulative score to obtain a credential.
10. ABLE: Adult Basic Learning Examination: A norm referenced test authored by Bjorn Karlsen and Eric F. Gardner and produced in 1986 by Psychological Corporation which gives a grade equivalent score for testers in the areas of vocabulary, reading comprehension, language, spelling, number operations, and problem solving.
11. CogAT: Cognitive Abilities Test: Authored by Robert L. Thorndike and Elizabeth P. Hagen, the CogAT test is published by the Riverside Publishing Company and is designed to measure the level and pattern of cognitive development in students in grades K –12. Scores are reported as Standard Age Scores, Percentile Ranks, and Stanines by age and Percentile Ranks and Stanines by grade.
12. ITBS: Iowa Tests of Basic Skills: Authored by H. D. Hoover, A. N. Hieronymus, D.A. Frisbie, and Stephen B. Dunbar, the Iowa Tests of Basic Skills was last published in 1996 by Riverside Publishing. It is “a series of norm-referenced achievement tests designed to provide a comprehensive assessment of student progress in the basic skills.” (<http://ericae.net/tc3/TC020634.html>) The Core Battery is used in GISD and covers the areas of reading, language, and mathematics.
13. TAAS: Texas Assessment of Academic Skills: Tests in the areas of writing, reading, math, social studies, and science administered to students in Texas beginning in grade three and administered annually through grade eight and again in grade ten. Reading and math tests are administered at each grade level for grades three through eight. The writing test is given in grades four and eight and exit (grade ten). The social studies and science

tests are given in grade eight only. Students are required to pass the exit level (administered beginning in grade ten) writing, reading, and math tests in order to receive a high school diploma.

14. TAAS Graduates: Students who have passed all three exit-level TAAS tests (writing, math, and reading).

15. AEIS: Academic Excellence Indicator System: Report published each year by the Texas Education Agency for each district, which includes statistics covering: TAAS passing rate by grade, by subject and by all grades tested; End-of-Course examination passing rate, attendance rate for the full year; dropout rate by year; high school completion rate; percent of high school students completing an advanced course; percent of graduates completing the Recommended High School Program; AP(Advanced Placement) and IB(International Baccalaureate) examination results; TAAS / TASP (Texas Academic Skills Program) equivalency rate and SAT(Scholastic Aptitude Test) and ACT(American College Testing Program) examination participation and results.

16. Effective Instruction: Instructional effectiveness will be measured according to the testing / passing rate of enrolled students.

17. Literacy rate: Grade equivalent score measured during the eighth grade administration of the ITBS reading test.

Student Characteristics

18. Ethnicity: Student ethnicity was identified in one of five groups: American Indian, Asian or Pacific Islander, Black, Hispanic, or White.

19. Home Language: Students' home languages were identified as English, Spanish, Laotian, Vietnamese, and Chinese.

20. At Risk: Students in grades 7 – 12 are identified as “at risk of dropping out of school” when the student:

- Was not advanced from one grade level to the next in two or more school years
- Is two or more years below grade level in reading or mathematics skills
- Did not maintain an average of 70 in two or more courses in any semester, including the current semester and is not expected to graduate within four years after beginning ninth grade
- Did not perform satisfactorily on one or more sections of the state assessment instrument.
- Is pregnant or is a parent.

(Quoted from GISD Board Policy “Special Programs: Compensatory / Accelerated Services. EHBC (LEGAL) issued 03/02/98 p. 1 of 4)

21. GPA: Grade Point Average: Grade point average used is the student's cumulative grade point average on a 4.0 scale.

22. Special Education Identified: Students who received special education services at any time between their eighth grade year and enrollment in the GED program.

23. Gifted/ Talented: Students identified by the district as “Gifted,” or “Talented,” or both.

24. Economically Disadvantaged: Students identified to receive free or reduced price lunch service any time between eighth grade and enrollment in GED.

25. Age: Students' ages as of September 01, 1999.

26. LEP: Limited English Proficiency: Students who were identified any time between their eighth grade year and enrollment in the GED program as having limited English proficiency.

27. Immigrant: Any student whose record indicated birth in a country other than the United States of America.

Populations and Samples

28. District Population: The district population included all students who were enrolled, even for one day, in a GISD GED program according to computer-generated class lists.

29. Study Sample Groups: The study sample groups were three naturally occurring groups (due to the time and location of the program) selected to represent three different instructional methods: the first group was a day-time high school program (identified in the study as "Traditional Instruction Group"), the second group was from the evening alternative high school (identified as the "Test/Retest Group"), and the third was from the discipline alternative school (identified as "Computer-Assisted Group").

30. Computer-Assisted Instruction Group: A naturally occurring group of GED students attended classes only on Saturday mornings. Instruction was available for students on Saturday mornings from 8:00 am until 12:00 noon throughout the school year. Students were required to be between the ages of 16 (with a court order) and 21 enrolled in the classes in person with a parent. Students met briefly with the instructor for an orientation interview before acceptance in the class. Students were not required to score at a certain level on a pretest or to meet attendance requirements to remain enrolled. Students were

allowed to participate in the program for as long as they held an interest. Students attendance was monitored but not strictly enforced. GED students attended the Saturday program at Warren Alternative Education Center.

All instruction conducted was done on the computer under the supervision of an instructor, a CAI program covering the five basic areas of the GED and including practice tests for the computer was used. All computer instruction was delivered through the subscription service of NovaNET, Inc. When students entered the program, they were pretested with an on-line test, ABLE (Adult Basic Learning Examination), measuring vocabulary level, reading comprehension level, language ability, spelling ability, computational ability, and problem-solving ability. Test results were measured in grade equivalent scores. Based on students' performances on this testing, students were assigned computer modules in each of the GED testing areas. Students who tested above ninth grade level in reading and problem solving were allowed to take the on-line GED practice tests. Students who tested below grade level were assigned computer modules to raise performance in identified weak areas. When students completed enough instruction to feel prepared for the GED tests, they were allowed to take the GED practice tests. The practice tests are formatted so that they can be reassigned and taken more than once. The practice tests are not half-tests but contain the same number and variety of questions as the actual GED tests. The practice tests are also timed by the computer with the same time limits as the actual GED tests. When students demonstrated the ability to score a 50 (possibly a 48 or 49 depending on the situation) on the practice test, they were given permission to take the actual GED tests. Students who demonstrated less than ninth grade

level ability in the areas of reading and problem solving were allowed to choose areas of instruction. Students were allowed to work on one subject area at a time or all areas at once. Students whose practice test scores were not 50 or above were assigned additional GED practice modules and reassigned the practice tests.

31. Test / Retest Instruction Group: Students in the evening GED classes enrolled in the program through the choice alternative high school. They were allowed to attend up to four hours per evening Monday through Thursday each week. They were encouraged to attend at least twice a week for at least two hours at a time. Students were not required to pass a pretest to enroll. Students were not dropped from the program because of attendance unless they did not attend at all for a three-week period. Students were allowed to come and go during instruction time and to arrive at any time during the instruction period (4 – 8 pm). All instruction was done using practice GED tests and individual help from the instructor. GED students attended the evening program at Garland Evening High School.

Students in the evening high school group worked with the GEDTS half-size practice tests. Six different versions of the half-size practice tests were available for each subject test. The practice tests are labeled AA, BB, CC, DD, EE, and FF. Upon enrolling in the class, students were allowed to choose one of the five GED testing areas and asked to take the AA version of the practice test. Practice tests were hand-scored by the instructor using a key and marking the correct answers. Students who scored a passing percentage (70 percent) or better were allowed to take the actual GED test. Students who did not score high enough were asked to analyze the answers on the practice test to identify why

their chosen answer was incorrect and the identified correct answer was better. Students were encouraged to ask the instructor if they could not determine the reason the identified correct answers were correct / better. This technique was used with each of the subject areas with the exception of mathematics. The instructor worked individually with most students preparing for the math test and teaching math skills since this area seemed to be a weakness for most students. When students had analyzed the AA version of their subject area tests, they were encouraged to try to better their score on the BB version of the tests. They continued to take versions of the practice tests. Students were allowed to work on one testing area until they improved enough to take the actual GED test in that area or to work on several areas at once.

32. Traditional Instruction Group: One of the high school daytime classes was selected for the traditional study group. Students in the program were required to pass a reading pretest and were placed in the program by the high school assistant principal. The total number of students enrolled at any one time was restricted. Students were encouraged to participate in the program for a maximum of six weeks. Students in the program were enrolled in the regular school curriculum and attended GED classes for two block periods (approximately three hours) every other day. They were required to attend regular school classes the rest of the day and all day on alternate days. Students were dropped from the program if they failed to maintain a level of attendance and performance. This attendance standard was much stricter than the other two instruction groups. Students worked with a combination of study guide workbooks and practice tests under the supervision of an instructor. GED students attended the daytime program at Naaman Forest High School.

The traditional GED curriculum used commercially prepared workbooks by Steck-Vaughn and Contemporary Books and official practice tests provided by GEDTS. Generally, students began instruction by taking the pretest that accompanied the workbooks. The tests are designed as a preview of the actual GED tests and a way for students to identify areas of weakness. The workbook itself begins with a “warm-up” section with a broad sampling of questions. Next, content chapters cover the essential concepts needed for the test, and, finally, sample questions designed as a practice for the actual tests are provided with a posttest with answer key and explanation. The posttest answer key refers the student to content sections in the book to review for a missed answer. An answer key is also included with explanations for each of the chapter exercises and practice questions. Students can use errors on the pretest to determine which chapters to study. When they complete instruction in the workbook, they take one of the versions of the official GED practice tests designed by GEDTS to be cleared for testing by the instructor. For students who test below grade level, there are Pre-GED practice workbooks designed to work on basic skills.

Procedures for Collection of Data

Students enrolled in the various district GED programs were identified using computerized class lists. The design of the study was to compare groups that received GED instruction in different formats. An inquiry was made of each of the GED teachers at each district high school. Most teachers sent lists of students enrolled and students who had tested and a brief description of the curriculum used. Information for the two high schools, which did not respond, was obtained by running a computer list of students

enrolled in GED classes for the 1999 – 2000 school year. Thus, 452 students were identified district-wide. Prior to data collection, three naturally occurring groups were identified. The type and times of GED instruction categorized the three distinct groups. The first group consisted of 20 students enrolled in the Saturday "computer-assisted" instruction classes. The second group of 120 students attended evening instruction at the choice alternative school; "test/retest" instruction was conducted solely with practice tests. The third "traditional" group of 24 students attended one of the daytime programs held at each of the regular high schools and used a workbook and practice/pretest format. Since each of the high school daytime programs had a similar format, a convenient location with a cooperative teacher and group size about equal to that of the computer-assisted program was chosen to represent the traditional group and for comparison with the computer-assisted and test/retest groups.

Information regarding students in the computer-assisted instruction GED program was maintained on an ongoing basis by the researcher. A record maintained by the computer software's management program was printed for each semester and was used for monitoring attendance, curriculum content, and participation.

Information regarding students in the test/retest GED program was obtained from the GED teacher and school counselor in three different interviews conducted throughout the school year. The GED curriculum and attendance information for the test/retest program was obtained from the teacher. The teacher was interviewed regarding teaching practices and student success.

When one of the daytime high schools was selected for comparison, the assistant principal in charge of the GED program was interviewed regarding selection and success of the students in the traditional program. The teacher was interviewed regarding curriculum, attendance, and participation. Records were obtained from both the teacher and the assistant principal.

General information contained and maintained in the school district's computer student management program was obtained for each of the 452 previously identified GED students. The student profile included: district ID number, last name, first name, middle name, gender, ethnicity, grade level, home language, birth place, birth date, age as of 09/01/99, social security number, Public Education Information Management System (PEIMS) identification number, and current district location. All of the above information for each of the 452 students, except middle name and PEIMS identification number, was entered into an EXCEL file. All students were assigned a study ID number.

An attendance profile was run for each of the 452 students. The profile showed entry date, withdrawal date and reason, and absences identified by type. The number of days enrolled in the GED program was calculated using the report and a school calendar. The number of enrolled days was rounded to the nearest five to approximate the number of school weeks unless the number was less than 20 in which case the exact number of days was entered. This number of enrolled days was entered in the EXCEL file. Absences in GISD are identified as "E" for excused, "A" for unknown absence, and "U" for unexcused. The total number of all types of absences was counted for each attendance record and entered in the EXCEL file.

A discipline profile was also run for each student. The discipline profile lists each reported discipline incident by date with comments explaining what happened and how it was handled.

A credit profile was also run for each student. The credit profile lists all classes completed by a student (passed or not) in the various groupings needed for graduation. It also shows the date that exit level TAAS tests were passed. The profile gives the total number of credits, number of credits toward graduation, credits lacking in each measured area, cumulative GPA (Grade Point Average), and class rank of the student. The credit profile was used to determine the total number of credits accumulated by each student and his/her current cumulative GPA. Total number of credits and cumulative GPA data were entered in the EXCEL file. TAAS testing data were cross-referenced with AEIS files to help identify TAAS graduates.

Addresses and phone numbers of students were also obtained from the student management program for the purpose of mailing consent letters for student interviews. The addresses and phone numbers were entered in an ACCESS database, and address labels were printed. Letters detailing the purpose of the study and requesting permission for an interview as approved by the IRB (Institutional Review Board) were mailed to the students in the three sample study groups. The researcher's plan was to randomly select ten students from each of the three study groups who returned interview permission letters. In the case of the Saturday GED group and the daytime high school group, there were ten or less respondents; thus, all were interviewed. In the group from the evening

high school, an equal number of those who passed the GED and those who did not was randomly selected and interviewed.

Testing data were obtained in several ways. The information recorded included the student's score on each of the five individual GED tests and the date his/ her last test was taken. GED testing records of those students who tested at the GISD testing center were obtained from the testing center. GED testing records of students who tested at the Mesquite testing center were obtained from their teachers.

Standardized testing data for comparison and correlation purposes were obtained in several ways. All TAAS data were obtained from AEIS (Academic Excellence Indicator System) computer files maintained by the district's Planning, Research, and Evaluation (PRE) department covering the years 1995 - 2000. Those files also helped identify students who were classified as economically disadvantaged, special education served, gifted / talented, at-risk, or LEP (Limited English Proficiency). Additional special population data were obtained from a part of the student management system not used earlier. Those data for special populations were entered in the EXCEL file as "y" for yes if students were so identified and blanks for those not noted in the category. TAAS scores for both eighth grade and exit level testing for any of the 452 students for which data existed in the computer files were entered in the EXCEL file. Iowa Test of Basic Skills (ITBS) results and Cognitive Abilities Test (CogAT) results were primarily obtained from a program designed and run by the technology department at the researcher's request. The program compiled data for 200 of the 452 students. ITBS and CogAT data for an additional 50 students were located by the researcher using the AEIS TAAS data to

identify the middle school attended in eighth grade (when both CogAT and ITBS are administered in GISD) and searching printouts of data, filed by middle school, in the district's research department. In addition, an attempt was made to physically search the permanent records of those in the test group without testing data to locate testing data maintained in the student's permanent file. ITBS and CogAT data were also entered in the EXCEL file.

Personal interviews of selected students in each group were conducted over the telephone or in person. The interview asked students about work experience, family background, reasons for leaving school, reasons for pursuing a GED, amount of GED preparation, and evaluation of preparation curricula and computer availability (see Appendix A for interview questions). Interviews were transcribed for evaluation.

Procedures for Analyses of Data

All data except address and phone numbers and interview responses were maintained in an EXCEL file. The entire group was analyzed using frequencies and percentages to determine the distribution of gender, ethnicity, age, grade level, number of credits, GPA, number of days enrolled, home language, birthplace (U.S. or not U.S.), special population qualities (special education, gifted/talented, economically disadvantaged, at-risk, LEP), and location of the GED program. The SPSS program was used for statistical analyses and some of the chart/graph generation. The EXCEL program was used for additional chart/graph generation and sorting to identify frequencies and percentages.

CHAPTER 4

PRESENTATION OF DATA

The main purpose of this study was to identify the effectiveness of different forms of GED tests preparation using varied curricula. In particular, the researcher hoped an analysis of the computer-based instruction, as a newer form of preparation, would show it to be more effective and engaging for students or, at least, as effective while more engaging. The overall purpose in studying GED instruction was to determine if GED preparation and testing offered in the Garland Independent School District (GISD) helped reduce the dropout rate. The analysis of the demographic data of the GED population was designed to identify characteristics of the general GED population as compared with those of the district population and those of the successful GED graduates.

The first step in looking at GED instruction involved looking at GISD's dropout rate and dropout trends. The most recent year for which annual dropout information has been released by the state was 1998-1999. In that report, the annual dropout rate for GISD was 0.5 percent, well below that of the region at 1.0 percent and the state at 1.6 percent. The annual dropout rate was also calculated in the state's report for ethnic and other subgroups. All subgroups' dropout rates in 1998-1999 in GISD were down from the year before (1997-1998). See Table 4.1 below. The first year in which the GED program was offered in GISD was 1990. At that time, GISD was assigned an annual dropout rate of 4.1 percent by state estimates (which were calculated differently than they are currently) and a pilot GED program was mandated by the state. The current 0.5 percent

annual dropout rate shows a significant drop during the decade. The annual dropout rate is computed by comparing the number of students who dropped out in grades 7 – 12 to the number of students enrolled in grades 7 – 12 in a school district. Students are designated as “dropouts” when they do not graduate, enroll in a GED program, or enroll in another educational institution or program.

Table 4.1

GISD Subgroup Dropout Data 1998-99 and 1997-98

| | African American | Hispanic | White | Native American | Asian Pacific Islander | Male | Female | Econ. Disadv. | Special Education | District Total |
|-------|---------------------|----------|-------|--------------------|------------------------------|------|--------|------------------|----------------------|-------------------|
| 98-99 | 0.5% | 1.0% | 0.3% | 0.0% | 0.2% | 0.5% | 0.4% | 0.5% | 0.3% | 0.5% |
| 97-98 | 0.8% | 1.0% | 0.4% | 0.8% | 0.6% | 0.7% | 0.6% | 0.7% | 0.6% | 0.6% |

(data obtained from Texas Education Agency web site:

http://www.tea.state.tx.us/cgi/sas8/broker?_service=alamo&prgopt=2000%Faeis%2Fdistrict.sas&year4=2000&year=00&topic=aeis&gifname=g_aeis2000district&level=District&title=AEIS+Report&_program=perf rept.perfmast.sas&search=distname&namenum=Garrland).

Another view of dropouts was offered by the cohort dropout data supplied by the state. This data may be a more accurate picture of the actual number of students lost each year. The most recent year for which cohort dropout data were available from the state was 1997-1998. Cohort dropout data analyzed the graduation rate of a particular class (the 1998 graduating class) of students who were tracked statistically since grade nine. GISD, with a cohort dropout rate of 5.1 percent, was well below the region’s (7.1

percent) and the state's (8.9 percent) percentages but significantly above the calculated annual district rate for 1997-1998 of 0.6 percent. See Table 4.2.

Table 4.2

GISD Cohort Subgroup Dropout Data for Class of 1999

| | Af Am | Hispanic | White | Native | Asian | Male | Female | Econ Disad | Special Ed | District Total |
|-------------|-------|----------|-------|--------|-------|-------|--------|---------------|---------------|-------------------|
| % Graduated | 77.4% | 67.0% | 82.8% | 92.9% | 89.8% | 75.0% | 86.0% | 70.4% | 59.3% | 85.2% |
| % GED | 3.0% | 5.1% | 8.9% | 0.0% | 2.7% | 8.5% | 5.4% | 6.0% | 7.9% | 5.2% |
| % in school | 12.8% | 15.9% | 4.9% | 0.0% | 4.3% | 9.4% | 5.5% | 14.3% | 27.1% | 6.0% |
| % dropout | 6.7% | 12.1% | 3.4% | 7.1% | 3.2% | 7.0% | 3.1% | 9.3% | 5.6% | 3.6% |

(data obtained from Texas Education Agency web site:

http://www.tea.state.tx.us/cgi/sas8broker?_service=alamo&progopt=2000%2Faeis%2Fdistrict.sas&year4=2000&year2=00&topic=aeis&gifname=g_aeis2000district&level=District&title=AEIS+Report&_program=perf rept.perfmast.sas&search=distname&namenum=Garland)

Research Questions and Hypotheses Considered

RQ1. What is the relationship between the preparation methods used and the passing rate of students? This research question was measured by comparing the calculated passing rate or number of GED graduates in the different instruction groups—traditional, test/retest, and computer-assisted. No significant difference was found in comparing the percentages. See Table 4.3.

H1: There is no significant difference in the passing rates of GISD students using computer-based instruction and those using traditional instructions. The null hypothesis was retained. See Table 4.4.

H1A: There is no significant difference in the passing rates of GISD students at the different locations (in the different instructional groups). The null hypothesis was retained. See Table 4.4.

Three study groups were analyzed for testing and passing rates. Students who took the GED tests were identified as GED candidates. Students who passed the GED tests with a high enough cumulative score to receive the GED credential were identified as GED graduates. The three groups compared were the traditional instruction group, test/retest instruction group, and computer-assisted instruction group. The percentages found are listed in the table immediately below:

Table 4.3

Numbers and Percentages of GED Candidates and Graduates

| Group | Total | Candidates | % Candidates | Graduates | % Graduates |
|-------------|-------|------------|--------------|-----------|-------------|
| Traditional | 24 | 14 | 58.33% | 10 | 41.55% |
| Test/Retest | 120 | 55 | 45.83% | 30 | 25.00% |
| Computer | 20 | 10 | 50.00% | 5 | 25.00% |
| Total | 164 | 79 | 48.17% | 45 | 27.44% |

Table 4.4

Chi-Square Calculation for Groups

| | Candidates (Total Tested) | Graduates (Total Passed) |
|-------------|-----------------------------------|----------------------------------|
| Traditional | 14 (Observed) 15.29 (Expected) | 10 (Observed) 8.71 (Expected) |
| Test/Retest | 55 (Observed) | 30 (Observed) |

| | | |
|----------|-----------------|-----------------|
| | 54.15(Expected) | 30.85(Expected) |
| Computer | 10 (Observed) | 5 (Observed) |
| Assisted | 9.56 (Expected) | 5.44(Expected) |

Chi Square = 0.55 Not Significant at .10

Table 4.5

Chi Square Calculation for Candidates in Instructional Groups

| Instructional Group | Passed (tested and passed) | Did Not Pass (tested and failed) |
|---------------------|--------------------------------|----------------------------------|
| Traditional | 10 (Observed) 9 (Expected) | 4 (Observed) 5 (Expected) |
| Test / Retest | 30 (Observed) 34 (Expected) | 25 (Observed) 21 (Expected) |
| Computer | 5 (Observed) 6 (Expected) | 5 (Observed) 4 (Expected) |

Chi Square = 1.756 Not Significant at .10

RQ3: What is the relationship between the number of student withdrawals from the preparation program and the preparation method used? This research question was measured by calculating the testing rate or number of GED candidates in the different instruction groups. No significant differences were found between the groups. See Table 4.3.

HIB: There is no significant difference in the percentage of nontesters at the different locations. The null hypothesis was retained. See Table 4.6 below.

Table 4.6
Chi Square Calculation of Total GED Students in the Study Groups

| Instructional Group | Passed | Did Not Pass(including nontesters) |
|---------------------|-----------------------------------|------------------------------------|
| Traditional | 10 (Observed) 6.58 (Expected) | 14 (Observed) 17.41 (Expected) |
| Test / Retest | 30 (Observed) 32.93 (Expected) | 90 (Observed) 87.07 (Expected) |
| Computer | 5 (Observed) 5.48 (Expected) | 15 (Observed) 14.51 (Expected) |

Chi Square = 2.847 Not Significant at .05

The overall percentage of GED graduates (those passing) was disappointing for all groups (27.44 percent overall) especially the test/retest and computer groups (25 percent). The traditional group had a higher graduate percentage (those who tested and passed) of 41.55 percent, although its candidate percentage (those who tested) of 58.33 percent was not very different than the 45.83 percent of the test/retest and the 50.00 percent of the computer groups. The traditional group, thus, had higher percentages of both candidates and graduates than the other two groups. However, the difference was not significant in a chi-squared test (Table 4.4 above). Thus, differences in instruction produced no significant difference in the percentages of candidates (testers) and graduates (passers).

RQ2: What is the relationship between total preparation time and passing rate? Students time of enrollment and number of absences were analyzed using the hypotheses below. No significant relationships were found.

H1B: There is no significant difference in the withdrawal rates at the different locations (from the different programs). The null hypothesis was retained. (See the percentage of testers in Table 4.3)

H1C: There is no correlation between the hours spent in preparation classes and the passing rate of students. The null hypothesis was retained. The Pearson Product Correlation Coefficient was .1265 and not significant (see Appendix C).

This research question was measured by analyzing the enrollment period and number of absences for all GED students. The average number of days of enrollment for GED students was 65.28 days (a semester is 90 days). The fewest number of days that a student was enrolled was one and the most number of days was 180 (the entire school year). The average enrollment period for the study groups was 48.84 days. Thus, there did not seem to be any connection between how long a student remained in the program and how well he/she performed on the GED tests.

The average number of absences for the population was 23.30 days with the least number of absences equal to zero and the maximum number to 145 days. The average percentage of absences was 35.70 percent. If absences show student engagement in the programs, students do not appear to be very engaged in the instruction. Students in regular school instruction are required to be in attendance 90 percent of the semester to receive credit for courses taken. The average absence percentage of 35.70 percent is significantly higher than the 10 percent allowed in regular education. Either GED students are not actively engaged in instruction and are not interested in attending GED classes, or chronic truancy problems displayed by GED students while enrolled in regular

school continue when they enroll in GED instruction. The students' disengagements from school, which lead them to pursue GED instruction, continued during GED instruction. A Pearson Product Moment Correlation Coefficient of -0.1494 showed a negative correlation between the number of absences and the cumulative GED score (see Appendix C). This finding was an expected but not significant difference.

RQ4: What are the characteristics of GED students?

The following characteristics of students in the GED population were gathered and recorded: last name, first name, GISD ID, study ID, Social Security number, study location, gender, ethnicity, special population status, at-risk status, date of birth, age as of 09/01/99, grade, born in the U.S. or not, number of credits, GPA, exit level writing TAAS score, eighth grade writing TAAS score, exit level math TAAS score, eighth grade math TAAS score, exit level reading TAAS score, eighth grade reading TAAS score, eighth grade science TAAS score, eighth grade social studies TAAS score, number of days enrolled in the GED program, number of absences, withdrawal reason, testing status, passing status, writing GED score, social studies GED score, science GED score, math GED score, literature and the arts GED score, cumulative GED score, CogAT verbal score, CogAT quantitative score, CogAT nonverbal score, CogAT verbal percentile, CogAT quantitative percentile, CogAT nonverbal percentile, reading ITBS score, language ITBS score, math ITBS score, reading ITBS percentile, language ITBS percentile, and math ITBS percentile. See Table 4.7 on ethnicity and language, Table 4.8 on gender and special populations, and Table 4.9 on age and grade and Appendix B below for a summary description.

One of the main difficulties of the study was missing data. Since standardized testing data for IQ measurement and achievement measurement are last gathered at the eighth grade level in GISD, any student who was not enrolled in the district during eighth grade did not have testing data. Additionally, students who had earned less than 5 credits during high school were not eligible to take the exit level TAAS -- regardless of age. Those students had no exit level TAAS data and only had other TAAS data if they were enrolled in GISD in eighth grade (the last administration of TAAS for students prior to the exit level). Just over half of the students were enrolled in GISD during eighth grade.

Qualitative data were gathered from a representative sample of the study group students through personal interviews. Thirty total students were interviewed from the three GED programs: 8 from the traditional instruction group, 10 from the test/retest group, and 12 from the computer assisted instruction group. The students were selected randomly, but the first 10 from each group who responded were used; and, due to a low response in the traditional group and higher response in the computer-assisted group, additional students from the computer-assisted group were used to reach a total of 30. Of the 30 students interviewed, 14 (47 percent) had done at least some testing. Only 8 students had completed testing and received their GED credentials (about 38 percent) at the time of the interview. About 60 percent of the interviewees were male (18 of 30). The ethnic distribution included 11 Hispanic (37 percent), 5 Black (17 percent), 14 White (47 percent), and no Asian or American Indian students. The makeup of the interviewees mirrored that of the GED population and the study groups. The majority of students said that they had access to computers 22 of 30. The average amount of computer expertise

was 2.7 on a scale of 4 point scale where 1 represents the least and 4 the maximum amount of computer expertise. Comments from interviewees are included in the discussion section of Chapter 5.

RQ5: What are the characteristics of GED graduates (passers)? See Table 4.7 on ethnicity and language, Table 4.8 on gender and special populations, and Table 4.9 on age and grade below.

H2: There is no significant relationship between certain student characteristics and GED testing success. In a multiple regression analysis, the reading ITBS score, number of credits, GPA, exit level reading TAAS score, and the CogAT nonverbal test score were found to have a predictive effect on GED test success (see Appendix C). Other characteristics were not significant predictors.

The ethnic and language characteristics of the state, the entire GISD district, the GISD district GED population, the three study groups combined and individually (traditional, test/retest, and computer-assisted), and the GED candidates and graduates are compared in the table immediately below.

TABLE 4.7

Ethnicity and Home Language

| Group | Am Indian | Asian | Black | Hispanic | White | Span Lang | Eng Lang | Other Langs |
|------------------|--------------|-------|-------|----------|-------|--------------|-------------|----------------|
| State | 0.3% | 2.6% | 14.4% | 39.6% | 43.1% | | | |
| Total District | 0.7% | 6.3% | 16.5% | 26.5% | 50.0% | | | |
| GED Population | 1.1% | 3.1% | 18.1% | 29.6% | 48.0% | 14.2% | 83.4% | 2.3% |
| Total Study | 0.6% | 1.2% | 13.5% | 35.6% | 49.1% | 13.5% | 85.3% | 1.2% |
| Traditional | 0% | 4.2% | 12.5% | 12.5% | 70.8% | 4.2% | 95.8% | 0% |
| Test/Retest | 0.8% | 0.8% | 12.5% | 40.0% | 45.0% | 14.2% | 84.2% | 1.6% |
| Computer | 0% | 0% | 20.0% | 40.0% | 40.0% | 20.0% | 80.0% | 0% |
| Total Candidates | 1.8% | 4.5% | 12.7% | 19.9 | 61.1% | 7.7% | 89.1% | 3.3% |
| Total Graduates | 2.9% | 2.2% | 8.1% | 18.4% | 67.6% | 5.9% | 93.4% | 0.7% |

According to the table above, the percentage of American Indians was higher among GED graduates (2.9 percent) than would be expected (compared to 1.1 percent for the GED population), however the N's were small. The percentage of Asians was smaller (3.1 percent) in the GED population and in the study groups (1.2 percent) -- especially the computer group (0 percent)-- and in the graduates (2.2 percent) than would have been expected considering the district population of 6.3 percent. The percentage of Black students seemed high in the computer group (20 percent) compared to the other two instructional groups (12.5 percent) and unusually low in the graduates group (8.1 percent) compared to the district population of 16.5 percent. The percentage of Hispanic students was lower than expected in the traditional group (12.5 percent) but higher in both the test/retest (40.0 percent) and the computer groups (40.0 percent) compared to the district population of 26.5 percent. There was a much higher percentage of White students in the traditional group (70.8 percent) and among the GED candidates (61.1 percent) and graduates group (67.6 percent) than would have been expected (50.0 percent in the district's population).

The information on languages spoken showed that the percentage of GED graduates (93.4 percent) or those who passed the tests and those in the traditional study group (95.8 percent) who spoke English was higher than in the district GED population (83.4 percent) or all those enrolled in GED instruction. Ethnically, the distribution of GISD GED students approximately represented the distribution of GISD students in general. Thus, differences detected in the groups and the GED graduates are worth note.

Minorities are underrepresented among those who actually received GED credentials or the GED graduates and disproportionally represented among the three instructional study groups compared to the total district population and the GED total population.

The percentages of students in the special populations of GISD showed some significant differences. The percentage of special education students in the GED population (13.8 percent) was approximately the same as in the district population (13 percent). However, there was a higher number of gifted/talented students in the GED population (1.5 percent) than in the GISD population (0 percent), although the numbers (Ns) were small. The number of LEP students in the GED population (5.7 percent) was less than in the GISD population (12.7 percent) as was the number of economically disadvantaged students (8.2 percent in the population compared to 34.5 percent in the district). See Table 4.8 immediately below.

TABLE 4.8

Gender and Special Populations

| Group | Male | Female | Econ | At-Risk | Sp Ed | G/ T | LEP |
|------------------|-------|--------|-------|---------|-------|------|-------|
| State | | | 49.0% | | 12.1% | 8.4% | 13.9% |
| Total District | | | 34.5% | | 13.0% | 0% | 12.7% |
| GED Population | 63.3% | 36.7% | 8.2% | 43.6% | 13.8% | 1.5% | 5.7% |
| Total Study | 60.7% | 39.3% | 0.3% | 37.1% | 14.5% | 1.2% | 4.2% |
| Traditional | 33.3% | 66.7% | 4.2% | 83.3% | 31.1% | 4.2% | 4.2% |
| Test/Retest | 65.8% | 34.2% | 2.5% | 28.4% | 14.7% | 0.8% | 4.1% |
| Computer | 65.0% | 35.0% | 10.0% | 35.0% | 20.0% | 0% | 5.0% |
| Total Candidates | 58.8% | 41.2% | 7.3% | 37.2% | 9.95% | 1.9% | 3.2% |
| Total Graduates | 55.1% | 44.9% | 7.5% | 31.6% | 5.8% | 2.9% | 0.7% |

All of the groups, except the traditional instruction group, showed a heavily male population. The traditional group also had an unusually high number of at-risk students (83.3 percent) as well as a high percent of special education students (31.1 percent). The

number of LEP students (0.7 percent) and special education students (5.8 percent) among the graduates was surprising low, since the percentages were about equal in all the other groups (approximately 5 percent in the other GED groups for LEP and 13 to 30 percent for special education). The number of economically disadvantaged students in the study group was lower (0.3 percent) than expected (compared to 8.3 percent in the GED population and 31.1 percent in the district population).

TABLE 4.8

Age and Grade

| Group | 15 Yrs | 16 Yrs | 17 Yrs | 18 Yrs | 19 Yrs | 20 Yrs | 21 Yrs | 22 Yrs | Gr 8 | Gr 9 | Gr 10 | Gr 11 | Gr 12 |
|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|------|-------|-------|-------|-------|
| State | | | | | | | | | 7.5% | 9.0% | 6.9% | 6.1% | 5.5% |
| Total District | | | | | | | | | 7.8% | 8.5% | 6.7% | 5.9% | 5.7% |
| GED Population | 1.3% | 25.7% | 43.4% | 18.8% | 7.7% | 2% | 0.9% | 0.2% | 0.2% | 17.0% | 23.5% | 34.5% | 24.8% |
| Total Study | 1.2% | 22.1% | 42.9% | 17.2% | 11.7% | 3.1% | 1.8% | 0% | 0.6% | 20.2% | 23.3% | 30.7% | 25.2% |
| Traditional | 0% | 29.2% | 62.5% | 4.2% | 4.2% | 0% | 0% | 0% | 0% | 12.5% | 29.2% | 37.5% | 20.8% |
| Test/Retest | 0.8% | 18.3% | 40.0% | 21.7% | 12.5% | 4.2% | 2.5% | 0% | 0% | 21.7% | 20.8% | 29.2% | 28.3% |
| Computer | 5% | 40.0% | 35.0% | 5.0% | 15.0% | 0% | 0% | 0% | 5.0% | 25.0% | 30.0% | 30.0% | 10.0% |
| TotalCandidates | 1.8% | 26.2% | 47.5% | 15.8% | 5.9% | 1.4% | 0.9% | 0.5% | 0% | 14.0% | 22.2% | 34.4% | 29.4% |
| Total Graduates | 0.7% | 28.7% | 51.5% | 12.5% | 5.1% | 0% | 0.7% | 0.7% | 0% | 15.4% | 17.6% | 35.3% | 31.6% |

The age data in Table 4.8 showed that the majority of GED students were aged 17, with over half of the GED graduates aged 17. The next largest age group was 16-year-olds. An unexpectedly high number of computer-assisted students (40.0 percent) were 16 years old. The largest number of traditional students (62.5 percent) was 17. The average age for GED students decreased with success while the average grade level increased. The mean age for the GED population was 17.3, for the GED candidates 17.1, and for GED graduates 17.0. Most GED students and GED graduates were eleventh graders. The mean grade level for the GED population was 10.69, for candidates, 10.80, and for the graduates 10.85. Students were about evenly distributed among the other

grades, with the exception of eighth grade. Only one student in the population was an eighth grader.

Grade point averages for the GED students were low. The average GPA and number of credits for GED students increased with GED success. The mean GPA for the GED population was 1.0186, the mean for the candidates was 1.2173, and for the graduates 1.3654 (Appendix B). The GPA was measured on a 4.0 scale where 2.0 was considered passing. Thus, even those students who received GEDs (graduates) did not have a passing GPA. GED students also tended to have a small number of credits. The mean number of credits for the GED population was 10.87, 11.81 for the candidates, and 12.79 for the graduates. Students are required to have 24 credits for graduation in GISD. Freshman have 0 to 5 credits, sophomores have 5 to 10 credits, juniors have 10 to 15 credits, and seniors have more than 15 credits and less than 24.

Thus, the typical GED student was a 17-year-old eleventh grader with a failing GPA and just barely enough credits to be classified as an eleventh grader. GED graduates were also 17 years old and had a better, but still failing, GPA and only slightly more credits than the general GED population.

Quantitative measures of the GED population and GED graduates were also analyzed (See Appendix B). In analyzing GED tests scores the national means were compared to those of the GED total population, the GED candidate group, and the GED graduate group. See Table 4.9 immediately below.

Table 4.9

GED Tests Means

| Test | National Candidates | District GED Population | Candidates GISD | Graduates GISD |
|----------------|------------------------|----------------------------|--------------------|-------------------|
| Writing | 44.60 | 46.50 | 46.67 | 48.68 |
| Social Studies | 48.27 | 49.10 | 49.65 | 52.05 |
| Science | 49.71 | 50.10 | 49.91 | 52.57 |
| Literature | 48.37 | 49.30 | 49.92 | 52.71 |
| Mathematics | 46.25 | 50.00 | 49.92 | 52.71 |
| Cumulative | | 226.56 | 221.94 | 256.66 |

Although the district GED population means were above the national means on all tests, with the biggest differences on the math and writing tests, the means of the graduate group were approximately two points higher than the district GED population on all tests. These findings suggested that students who tested from the GISD GED population scored better than the average GED candidate did, but needed to score at least two points higher on each test than the candidate average to obtain their GED certificates.

An analysis of the GED population's performance on other testing instruments showed that the population's mean scores on the state measurements were below passing. The Exit Reading Texas Assessment of Academic Skills (TAAS) mean score was only 62.07 (70 is considered passing) and the mean score on the Exit Math TAAS was 60.89 (70 is considered passing). The Exit Writing TAAS score mean for the GED population was 1370.57 (1500 is considered passing). A student in Texas public schools must pass all three TAAS measures in order to receive a diploma. Since the mean scores for all

three measures were below passing, it appears that the GED students have not been academically successful and might not have received diplomas if they stayed in school. Even looking further back at the state's measurement of achievement of the GED population, the mean scores for the TAAS tests administered during the eighth grade year were also below passing. The mean eighth grade TAAS scores were 68.26 for reading and 64.05 for math where 70 is passing. The other three eighth grade TAAS tests means were 1459.26 for writing, 1490.83 for science, and 1462.93 for social studies where 1500 is considered passing. All five means were below the passing level.

An analysis of the achievement level of the population on a national achievement test showed that achievement levels were also slightly below grade level. The mean grade levels for the GED population were 7.3 for reading, 7.7 for math, and 8.1 for language as measured on the Iowa Tests of Basic Skills administered in GISD when students are at the 8.3 grade level.

The mean intelligence test scores (measured on the CogAT: Cognitive Abilities Test) ranged from 90.68 on the verbal measure up to 97.42 on the nonverbal measure (see Appendix B). Considering the national mean intelligence score is 100, the GED population mean was below average – up to 10 points below on the verbal measure. Thus, the average intelligence of the GED population was slightly below what might be expected. The highly positive correlation between the CogAT quantitative score and the Math ITBS score was .7448. In addition, the highly positive correlation between the CogAT verbal score and the reading ITBS score was .7424. It appeared that there was a strong positive connection between the ability of the GED population and their national

achievement scores. When comparing the TAAS scores with the GED scores, a strong correlation was expected on all five subject area tests; however, only the reading and math scores showed a significant positive correlation of .60 on the reading and .73 on the math. The other tests had less than a .34 correlation. See Appendix C for correlation data.

Individual correlations were calculated for expected predictors of GED success and a multiple regression analysis of the variables (see Appendix D) was performed. In checking variables for their effect on the GED score, the CogAT score, the reading ITBS score, the number of credits, the GPA, and the absences were considered. The largest positive correlation (.4519) was the reading ITBS score and the GED cumulative score. The number of absences did correlate negatively (-0.1494) but not largely. A multiple regression analysis using the characteristics of GPA, reading ITBS score, exit level reading TAAS score, CogAT verbal score, number of credits, ethnicity, home language, gender, and age was performed. The variables GPA, reading ITBS scores, exit level reading TAAS, CogAT nonverbal score, and number of credits explained about 60 percent ($r^2 = 60.8$) of the GED cumulative score.

Because the other characteristics were not significant in predicting the GED cumulative score, they are not presented or discussed here. The multiple regression analysis showed the most important factor for prediction was the exit level reading TAAS score (Beta = .420). The reading ITBS score and GPA were also important predictors. Surprisingly, credits showed a negative impact on GED scores. The regression analysis presented in Appendix D answered research questions 5 through 9 and addressed the

related hypotheses H2, H2A, H2B, H2C, H2D. The correlations that were run addressed research questions 11 through 15 and the related hypotheses H2E through H2J.

Research Question 10 and Hypothesis H2E considered the possibility that students who passed all three exit level TAAS tests (were TAAS graduates) were more likely to pass the GED tests and be GED graduates. This question was considered different than those treated by the information in Appendix D. The question was analyzed with simple percentages; a much higher percentage of TAAS graduates was found among GED graduates (57.5 percent) than in the general GED population (33.8 percent). A discussion is presented in Chapter 5.

Statistical analyses of the GED population defined who the students were. Further analyses established the differences among GED candidates and GED graduates. As expected, the type of instruction was not a significant cause of differences in passing rates. Although there was quite an accurate picture of the typical GED student drawn by data collected, not enough research was done quantitatively or qualitatively to determine why students did not complete their GED testing. The low percentages of students who tested and students who passed were an unexpected result of the study. The high percentage of absences among students was also unexpected. If those negative factors had been anticipated, the study could have better addressed them and perhaps have offered suggestions for improving GED testing success aligned with high absenteeism and low completion rates.

CHAPTER 5

CONCLUSIONS

The Study

The primary purpose of this study was to determine if the different GED instruction programs (a traditional study group, a test / retest group, and a computer-assisted instruction group) held at different locations affected the passing rates of students. Secondly, the study examined the characteristics of the total GED population, the GED candidates—those who tested-- and the GED graduates—those who passed. The examination of characteristics was both to describe the population and the different instructional groups and to look for correlations between student characteristics and GED success among the population and within the instructional groups.

The study focused on GED students in the Garland Independent School District. Information contained in 53 variables was maintained on 452 students in the district GED population. The GED population demographics were analyzed; the demographics of the study samples of the traditional, test / retest, and computer-assisted instruction groups, as well as those of the total group of GED candidates, and GED graduates were also analyzed. GED population correlations were calculated for a variety of variables to determine characteristic effects and connections. Students in the three different GED programs – a traditional, a test /retest, and a computer-assisted instruction group -- were compared for testing and passing rates. Random students from each of the three study

samples were also interviewed and asked about school, GED instruction, and home experiences.

Findings

The primary focus of the study was covered in the following research questions and hypotheses:

R1: What is the relationship between the preparation methods used and the passing rate of students?

H1: There is no significant difference in the passing rates of GISD students using computer-based instruction and those using traditional instruction.

H1A: There is no significant difference in the passing rates of GISD students at the different locations.

A chi square test of significance showed no significant difference between the passing rates of students in the three programs – traditional instruction, test / retest instruction, and computer-assisted instruction. The three different instructional methods were offered at three different locations. The location at which students studied did not affect their passing rates or their testing rates. Three areas were compared for each location / instructional program: the number and percentage of the total students in the particular instructional program who began testing; the percentage of the students who tested that passed; and the number and percentage of the total students who received credentials. A chi square test of significance was performed on each of the three comparisons. None was found to be significant.

Students were interviewed about their experiences in the different programs. Although students were asked about the activities most helpful to them in the different programs, the interviewer failed to ask why students were enrolled in the particular program they chose. Since students in the district are free to enroll at any of the programs, this lack of information about students' motivations for selection made it impossible to know if the type of instruction offered was a factor in the program selected. Even though the question was not specifically asked in the interview, it was the impression of the interviewer that students chose the programs they did because of the time or the location where they were offered. The type of instruction offered was not publicized by any of the programs, except the computer-assisted program, before students were enrolled.

R2: What is the relationship between total preparation time (measured as the amount of time students were enrolled in preparation programs) and passing rate?

HIC: There is no correlation between the hours spent in preparation classes (measured as the number of days enrolled in preparation classes) and the passing rate of students.

Length of enrollment and, thus, study time did not affect passing rate; in a Pearson Product Correlation test, there was not a significant positive correlation between the number of days enrolled and the cumulative GED score. This finding was both surprising and disturbing. The lack of connection between study time and success suggested that study time was not particularly helpful in ensuring GED success. The question of preparation time would have been helpful if included in the student interviews. However, no

related questions were asked and no information other than attendance records was available to consider this problem.

R3: What is the relationship between the number of student withdrawals from the preparation programs (measured as students who did not test) and the preparation method used?

H1B: There is no significant difference in the percentage of nontesters at the different locations.

The number of withdrawals from the program was equated to the students who did not test during the school year. Those students who withdrew during the year or at the end of the school year without beginning GED testing were considered as program droppers for the purpose of the study. A chi square test of significance showed no significant difference in the percentage of nontesters in the three different programs at the different locations.

Interviewed students explained their lack of testing progress as a general lack of progress in the program. Most said they had not stayed with the preparation program long enough to be prepared for testing. Several said that they had become discouraged with the length of time preparation was taking.

R4: What are the characteristics of GED students?

R5: What are the characteristics of GED graduates (“passers”)?

A wide range of information was collected and analyzed for the district population, the GED population, the GED candidates, and the GED graduates as well as the students in the three different instructional groups – traditional, test / retest, and computer-assisted.

The data were analyzed using Pearson Product Moment Correlation Coefficients and a multiple regression analysis.

Although no specific gender percentages were available for the district, if it can be assumed that the district population was approximately 50 percent male and 50 female, there was a markedly higher percentage of males in the GED population (63.3 percent). In the GED population of GISD, the ethnic distribution of students was very similar to that of the GISD district population (within 2-3 percentage points). The percentages of the three largest ethnic groups were very similar in the GED population and the district population. The percentage of special education students (13 percent) was also similar in both populations (district and GED). However, the percentages of economically disadvantaged students (8.2 percent in the GED population compared to 34.5 percent in the district population) and LEP (Limited English Proficiency) students (5.7 percent in the GED population compared to 12.7 percent in the district population) were notably lower in the GED population than in the district population. Although figures were not available for the district as a whole, the percentage of at-risk students (43.6 percent) in the GED population was high. The majority of GED population students were born in the United States (87.6 percent) and grew up speaking English (83.4 percent); they were 17 years old (43.4 percent) and in grade 11 (34.5 percent). They had a low GPA (1.0186 on a 4-point scale where 2.0 is considered passing) and an average of 10.9 credits (10 credits is the cut off used to classify students as juniors) in a program where 24 credits are required for graduation. GED students might be summarily described as generally male, ethnically

diverse, not economically disadvantaged, but classified at-risk, with poor grades and less than half the needed high school coursework completed.

While information regarding U.S. citizenship and native language for the district was not available, the fact that LEP students are underrepresented in the GED population compared to the district population and nearly absent among the GED graduates seemed to indicate that few students not born in the United States and not growing up speaking English were successful in receiving a GED credential. Those LEP immigrants who entered the GED program tended to drop out without testing and if they stayed to test, dropped out without passing.

Standardized testing showed the GED population to be about average or just below average in intelligence (as measured on the CogAT – Cognitive Abilities Test) with mean scores of 90.68 on the verbal, 94.46 on the quantitative, and 97.42 on the nonverbal where 100 is considered the national mean for all three tests. The highest percentile noted for the GED population for the mean intelligence test scores was the nonverbal at 42.34 percent (well below the 50 percent expected for average intelligence).

Achievement test scores (measured on the Iowa Tests of Basic Skills and TAAS) were generally in the lower two quartiles (percentiles for the mean scores ranged from 41 percent in reading to 47.7 percent in language). Grade equivalent scores (measured on the Iowa Tests of Basic Skills) showed the GED population to be generally just below grade level (7.3 in reading, 7.7 in language, and 8.1 in math when students were in the third month of eighth grade – 8.3).

A higher percentage of females (44.9 percent of GED graduates compared to 36.7 percent of the GED population) and of white students (67.6 percent of GED graduates compared to 48 percent of the GED population) passed than would have been expected. The numbers of Asian and American Indian students in both the GED population and among the GED graduates were small. However, a higher percentage of the American Indian students (2.9 percent of GED graduates compared to 1.1 percent of the GED population) passed and a lower percentage of the Asians (2.2 percent of GED graduates compared to 3.1 percent in the GED population) passed. The percentages of Hispanics (18.4 percent of GED graduates compared to 29.6 percent of the GED population) and Blacks (8.1 percent of GED graduates compared to 18.1 percent of the GED population) were lower than expected. Fewer special education students (5.8 percent of GED graduates compared to 13.8 percent in the GED population) and even fewer LEP students (0.7 percent of the graduates compared to 5.7 percent in the GED population) were successful than would have been expected. The percentage of native English speakers (93.4 percent of GED graduates compared to 83.4 percent of the GED population) was higher in the passing group than would have been expected. Economically disadvantaged status students (7.5 percent of GED graduates compared to 8.2 percent of the GED population), however, were about as successful as would have been expected. At-risk students had a lower percentage in the passing group than in the population (31.6 percent compared to 43.6 percent). Thus, White females who were native English speakers not in special education or at-risk had higher passing rates than expected. Students in special

education or classified as LEP or at-risk or who were Black or Hispanic passed at a lower rate than would have been expected.

These findings suggested that Hispanic, Black, and Asian students were not passing the GED tests at the expected rates. The percentage of Black students in the GED population (18 percent) was higher than in the group of students who completed instruction and tested (12.7 percent) which was still significantly higher than the students who passed (8.1 percent). Only 28 of the 82 Black students in the population took the tests and less than half of those 28 (only 11) passed. Hispanic students were also underrepresented in the passing group with 29.6 percent in the population and only 19.9 percent in the testing group and 18.4 percent in the passing group. Only 44 of the 134 GED Hispanic students even took the tests and only 25 of the 44 passed. The percentages for Asian students may not show the real variations because of the low number of Asian students in the study; 3.1 percent of the population was Asian, 4.5 percent of the testing group, and 2.2 percent of the “passers.” There were only 14 Asian students in the population; 10 of them tested but only 3 passed. A summary of statistics is presented in Appendix B.

H2: There is no significant relationship between certain student characteristics and GED success.

A multiple regression analysis of the characteristics that were expected to have an effect on GED success (as measured by cumulative score) showed that five variables explained 35 percent of the dependent variable (cumulative GED score). The five variables that predicted the GED cumulative score were exit level TAAS reading score, reading

ITBS score, CogAT nonverbal score, credits, and GPA. The variables: age, ethnicity, gender, and home language were tested but excluded and found not to significantly explain cumulative GED scores.

The research questions and hypotheses tested several specific correlations. See Appendix D.

R6: Is there a correlation between literacy rate (ITBS reading score) and the cumulative GED score?

H2A: There is no significant relationship between student literacy as measured on the ITBS reading test and the GED cumulative test scores.

A Pearson Product Moment Coefficient showed a positive correlation of 0.4311 between the ITBS reading scores and the cumulative GED scores. Thus, ITBS reading scores were fairly good predictors of GED success. The null hypothesis was false. There was a significant relationship between the two scores. This finding was expected because national study (the NALS study) has shown a correlation between literacy rate and GED success.

R7: Is there a correlation between the number of high school courses completed by a student and the cumulative GED score?

H2B: There is no significant relationship between the number of high school courses completed (credits) and cumulative GED test scores.

The correlation between high school credits and cumulative GED scores was slightly positive with a correlation coefficient of 0.1824. The null hypothesis was retained showing that high school credits had no significant effect on cumulative GED scores. The

researcher expected a higher correlation between these two measures because national study has shown that the amount of high school courses completed affects GED success.

R8: Is there a correlation between a student's IQ and the cumulative GED score?

H2C: There is no significant relationship between student IQ scores and the cumulative GED test scores.

The correlation coefficient for the CogAT nonverbal test of intelligence and the GED cumulative score was 0.2932 – positive but not significant. The null hypothesis was retained.

R9: Is there a correlation between a student's high school GPA and the cumulative GED score?

H2D: There is no significant relationship between a student's high school GPA and cumulative GED test scores.

There was a positive correlation coefficient of 0.2158 for GPA and cumulative score but it was not significant. The null hypothesis was retained. However, the average GPA was higher among GED graduates. Students likely to be successful in the regular school setting are also more likely to be successful in GED testing.

R11: Is there a correlation between a student's exit TAAS math score and GED math test score?

H2F: There is no significant relationship between a student's exit TAAS math test score and the GED math test score.

There was a strong positive correlation of .7331 for the math TAAS and the math GED. The correlation was significant. The null hypothesis was rejected. This correlation

was the largest among those tested. This finding was surprising in the strength of the correlation shown.

R12: Is there a correlation between a student's exit TAAS reading test score and the GED literature and the arts test score?

H2G: There is no significant relationship between a student's exit TAAS reading test score and the GED literature and the arts test score.

The positive correlation between the reading TAAS and the literature GED was only .2809 and positive but not significant. The null hypothesis was retained.

It was interesting that the correlation between the reading ITBS and the literature GED was so much higher (0.6003) than between the reading TAAS and the literature GED. The correlation between the reading ITBS and the reading TAAS was 0.3023 at a .003 level of significance. The researcher expected a higher correlation between the two measures of reading achievement.

R13: Is there a correlation between a student's exit TAAS writing test score and the GED writing test score?

H2H: There is no significant relationship between a student's exit TAAS writing score and the GED writing test score.

The correlation between the writing TAAS and the writing GED, although positive, was the least of all those measured in the subject area GED tests. It was noted as 0.1824 at a .03 level of significance. The null hypothesis was retained. The researcher was surprised by the low correlation and could offer no plausible explanations.

R14: Is there a correlation between a student's eighth grade TAAS science score and the GED science score?

H2I: There is no significant relationship between a student's eighth grade TAAS science score and GED science test score.

There was a positive correlation coefficient of 0.3552 to the .002 level of significance between the TAAS science score and the GED science score, a significant comparison. Thus, the null hypothesis was rejected.

R15: Is there a correlation between a student's eighth grade TAAS social studies score and the GED social studies score?

H2J: There is no significant relationship between a student's eighth grade TAAS social studies score and GED social studies score.

The correlation coefficient for the social studies TAAS score and the GED social studies score was 0.3007 to the .005 level of significance. And again the null hypothesis was rejected.

All subject area achievement tests showed a positive correlation with the corresponding subject area GED tests. However, surprisingly, only the social studies, science, and math tests showed statistically significant correlation.

R10: Is there a relationship between passing all exit TAAS tests and passing the GED tests?

H2E: There is no significant relationship between a student passing all TAAS tests and passing the GED tests.

The percentage of TAAS graduates was significantly higher among GED graduates (39.31 percent) than in the general population (28.04 percent). A significant 77.10 percent of those who took all three of the exit level TAAS tests and passed all three were GED graduates if they took the GED tests. Thus, students who pass all three exit level TAAS tests are likely to pass all GED tests. The null hypothesis was rejected.

Discussion

It seems clear that having a GED program did reduce the number of dropouts in GISD (from 4.1 percent in 1990 to consistently below 1 percent the two years reported in this study). Thus, it will continue to be important for GISD to offer GED preparation programs as one way to work on reducing dropouts. The majority of GED students interviewed said that they entered the GED programs because they were too far behind in earning credits and did not think they would be able to finish and graduate in a timely manner. This anecdotal information coincides with the statistical information – the majority of students is 17 years of age and has 10 credits (24 are needed for graduation). Considering these statistics, very few of the GED students are on track to graduate on time (at age 18) if they remain in regular school. Several of those who had a higher number of credits said that they entered the GED program because they could not pass the exit level TAAS tests required to graduate. Very few of those students who had been unsuccessful with TAAS tests were successful with GED tests. GED instruction seems best suited for students who have the ability to earn high school credits and a diploma but, for whatever reason, have fallen behind in doing so. A GED program may not address the needs of the typical unsuccessful high school student.

A total of thirty students were interviewed from the three GED programs: 8 from the traditional instruction group, 10 from the test/retest group, and 12 from the computer-assisted instruction group. The students selected for the initial interviews were selected randomly, but the first ten from each group who responded were used; and, due to a low response in the traditional group and higher response in the computer-assisted group, additional students from the computer-assisted group were used to reach a total of 30. Of the 30 students interviewed, 14 (47 percent) had done at least some testing. Only eight students had completed testing and received their GED credentials (about 38 percent) at the time of the interview. About 60 percent of the interviewees were male (18 of 30). The ethnic distribution included 11 Hispanic (37 percent), 5 Black (17 percent), 14 White (47 percent), and no Asian or American Indian students. The makeup of the interviewees mirrored that of the GED population and the study groups.

Five of the 18 males in the interview group had children; two of those five had two children. Seven of the 12 females among the interviewees had children; only one of those seven had two children. Pregnancy at the time of the interview was counted as having a child. The males in the group stated a need to work or a disenfranchisement from school as the primary reason for leaving regular school. The majority of the females left due to pregnancy. The females without children left because of disengagement from school. A high percentage of the female students who tested were likely to receive their GED credential (four of five females compared to four of nine males).

Most of the students who did not test said that their failure to test was because they had not completed instruction; frequently, they had stopped attending GED classes

and dropped out, especially if they had turned 18. Most nontesters said they had become discouraged with their progress. Students who began testing and did not pass tests on the first attempt were unlikely to complete testing if retesting were required. Only one of the unsuccessful testing students interviewed had continued instruction and retesting after failing to earn enough cumulative points to receive the GED. That student felt that she had failed to earn enough points because she took the tests without caring about her score and without pursuing additional instruction before retesting. She was on her third round of testing and results were still pending at the time of the interview. Other students who had not completed testing offered additional reasons for the delay. Sometimes they mentioned distractions (being in jail or being busy with family) that had kept them from following through or a lack of money or planning for testing.

Students who had earned their GEDs tended to have positive comments about the programs. One successful student from the computer-assisted group remarked, “getting a GED saved my life. My girlfriend was pregnant and everybody was mad at me, ‘til I got my GED.” That student, even at age 17, was able to get married and get a job and begin community college and building a life for his wife and child. He believed that it would have taken him an additional year and a half to two years to earn a diploma – time he did not have with a new family to support. He had glowing praises for his teacher and the program.

A successful student in the test/retest program praised that program for providing only the instruction needed. He was able to prepare and pass the tests in a very short time using the practice tests only. He had left school because he felt that the teachers and

administrators in regular school were not helpful or sensitive to his needs. The individualized preparation of the GED program worked well for him. Preparing for and passing the GED was easy for him and he was able to move on to community college quickly. He also had glowing praises for his teacher and the program.

Similar comments came from a successful student in the traditional instruction program. The best part of the traditional program for her was staying in school while maintaining her job. She was able to complete her GED instruction in the mornings and work full-time during the week and weekends. She planned to use the money saved from her job to enter community college for the semester following the interview. She had been able to earn her GED quickly and easily while maintaining her job and own means of support.

In contrast, students who had not tested offered few explanations for not completing their GED credentials. Most said they had not realized how much work it would be to prepare. Several expressed an interest in just testing and “getting it over with.” One of the computer-assisted female students with an infant said, “there were just too many things . . . the baby was sick or I had no sitter or I didn’t want to leave her.” She found even the limited time needed for GED instruction difficult to manage with the needs of a newborn and limited help and support at home. One of the male students explained his lapse in pursuing his GED as job-related. He was offered more hours at work; the additional work left him little time for GED classes and GED testing. He had not needed his GED to get his current job and felt it might not really be necessary. He was only pursuing his GED to please his mother. Another male student shared that he was

pursuing his GED mainly as a way to please his parents; “get them off my back,” he said. He indicated that attending GED instruction was required to please his parents; it was his attendance only, not his level of effort, that he thought was important. One student in the test/retest program admitted that he enrolled in GED instruction to please his probation officer; he could show he was attending school without having to attend a full day school program and show passing grades. His probation required his attendance not his success. He would work hard at his GED practice tests periodically when he felt his probation officer was checking with his teacher; but, as soon as the probation officer eased the checking, he eased his efforts. He wanted his GED, but he was not willing to put in the effort required to prepare for testing with instruction; he said, “I just wanted to take the tests.” He believed that he could pass the tests if given the chance despite what his teacher thought and the practice tests showed.

Only one of the students interviewed said that he would like to return to regular school classes. All of the rest of the students appreciated the abbreviated school schedule and individualized attention and looser structure of the GED classes. One of the traditional instruction students commented, “my regular school was hung up on tardies and tobacco. I was always in trouble for one or the other. My mom was tired of the tobacco tickets and the phone calls.”

The main reason all interviewees gave for entering the GED program was a lack of sufficient credits. Students saw themselves behind in credits; many were 17 year old freshmen who needed at least two to three years of full credits (eight per year) to receive a diploma. Many of the students interviewed mentioned problems with attendance. The

attendance requirements at the different locations may have affected students' attendance percentages. Attendance at the traditional program was strictly monitored and students were dropped if they had a number of unexcused absences. Attendance in the test/retest evening program was only loosely monitored; students were encouraged to attend but not closely monitored and not dropped until a significant period of nonattendance. Students in the computer-assisted Saturday program were not closely monitored for attendance and were dropped only when they asked to be dropped. Interviewed students frequently reported having had poor attendance at regular school and having lost credits due to absences. Often, these students explained the absences as related to extended illness, pregnancy or childcare, or job related. In those cases, the flexibility of a CAI program available at home might offer a way to reach these students. Sometimes they mentioned that their truancy was related to a lack of interest and success at school. All of the students said that they were not likely to have finished school if they had not moved to a GED program. They could not think of changes that would have allowed them to remain in regular school, although those that felt disengaged from regular school frequently blamed the teachers and the atmosphere of regular school for the disengagement.

The average age of the GED students was 17 and the average grade was 11. Due to the compulsory attendance laws in Texas, 17 year olds must be in school; 18 year olds and older may drop out or pursue other educational options without state monitoring. Thus, 17 year olds who must be in school but who are unlikely to complete high school by age 18 will find GED instruction an attractive option. Students who are 17 must have parental permission to pursue a GED and to test. Students who are 18 years old and older

may make those decisions on their own. Therefore, GED instruction offered in high schools is most likely to impact 17 year old students unlikely to graduate but forced (by law) to remain in school.

The average GPA of the GED population showed that GED students had been unsuccessful in school. GED students generally were not passing their high school classes before coming to GED. Even though they were accumulating some credits, they were still failing many classes. A substantial number of the GED students (77) were still classified as ninth graders because they had less than five credits. GED students also tended to have attendance problems. The average length of enrollment for a GED student in a GED program was 65 days with an average of 23 absences during that time. In the regular high schools, students must have less than 16 absences in a year (180 days) to receive credits. Many GED students seemed to have had truancy problems. Their lack of interest in attending school was consistent with their low grades and few credits and desires to earn GEDs rather than high school diplomas.

The means of the standardized tests reported also showed that GED students performed slightly below average on an IQ measure and slightly below grade level on an achievement measure. Both characteristics seem unlikely to promote school success. Since the multiple regression analysis of the GED characteristics indicated that achievement variables could predict a significant part of the GED score, these low means are a concern in moving students toward GED success. The same characteristics that impacted regular school success (with the exception of attendance) also impacted GED success. This finding was disturbing in that it indicated that students who were unlikely to be successful

in regular high school were also unlikely to be successful in GED instruction. The findings did explain, however, why the percentage of students who completed instruction and attempted the test was low.

Although it was not measured in the characteristics recorded, several of the students interviewed reported that they sought a GED credential because they were parents. Both men and women reported having children and family responsibilities that required them to be at home to care for young children or to work to support them. Thus, a student's time frame for high school completion became immediately compressed with the birth of a child and the time available to pursue that goal became dramatically shortened; a GED credential could answer that need.

Implications for Further Research

The primary findings of the study showed that instructional methods did not impact GED success. A quantitative analysis of the data showed no significant difference in the passing rates of students based on different types of instruction. A qualitative analysis of interviews with students showed that students in the programs liked the format of their programs equally well. There is room for more in-depth qualitative research on why students are not successful in traditional high schools and in current GED programs. There may also be room to explore the possibility of using CAI instruction at home as a way to reach students who have difficulties in attending regular school or GED programs. Even though there has been limited research on GED instruction, since instruction in this study situation did not seem to impact GED success, additional research on instruction may not be useful. Instead, it may be more helpful to continue to look for predictors of

success. The NALS literacy study showed that literacy rate was a good predictor of success. Research by the ACE showed that the number of high school courses completed impacted GED success. If there are other behaviors or experiences that can predict success, identifying them will provide a means of prediction for potential GED students as well as recommendations which can be made to students looking for ways to improve their chances of success in obtaining GED certificates.

Recommendations for Further Research

Most GED research has been centered on what happens to GED graduates after they receive their GED credentials; do they do as well in college or advanced training as those who earn high school diplomas? Are they able to perform as well as high school graduates in work situations? The focus of these studies has been to show that receiving a GED credential is equal to receiving a high school diploma. GED graduates can then be sure that they will have the same opportunities as their high school graduate counterparts. The GED credential is a viable alternative to the high school diploma; however, it is not the answer to the dropout problem. Research needs to be directed toward finding alternative measures (other than standardized achievement tests) to show that students have completed the education needed for job situations. Achievement tests may be valid measures of which students will succeed in academic situations. However, there need to be alternate routes to job success for students not inclined toward academic success in junior or four-year colleges.

Research needs to concentrate on the dropout problem. Students need to be prepared to contribute in today's high tech work force. The school reform movement

needs to address the number of students who are being disenfranchised from school and who are becoming parents prematurely. Students who are unlikely to earn enough credits or a high enough GPA to graduate need to be identified and directed toward an alternative – GED or something else – earlier than age 17.

Conclusion

The primary question of this study was whether the three instructional methods studied impacted GED achievement. All statistical analyses indicated that there was no difference in success or achievement due to instruction. So, it is not the place, or the type, or the time at which instruction is offered that impacts GED success. As noted earlier, the achievement variables were the best predictors of success (TAAS scores, ITBS scores, GPA, and somewhat less - IQ). The other characteristics (gender, ethnicity, age, home language, and credits) tested offered little impact on GED scores. It will be possible to largely predict GED successes with achievement scores comparisons. Students who test well on other test measures are likely to test well on the GED tests.

The question remains whether instruction moves students toward GED success at all or whether they come in likely to pass or fail and instruction does little to change that probability. There is enough variance left in cumulative GED scores that was not explained by the achievement predictor variables to hope that some other variables, not easily measured or tested, like teacher support and level of engagement in instruction, may explain the additional successes. Additional research might be directed toward measuring those variables or studying students more in depth with additional interviews to better understand their instructional needs. Thus, it is important to maintain a GED program for

students who need to finish high school in a timely manner. Since instruction did not make a significant difference in testing success, the least expensive and most easily maintained program can be selected unless additional research shows that teachers or engagement do make a difference in success. The program might also consider offering remote computer access to that group of students who are pregnant or parenting or assigned to jobs during normal school hours in case such access might enable them to complete GED instruction.

The largest concern identified was the large number of students who participated in some type of GED instruction but who did not complete instruction and take the GED tests. It is likely that these students are indeed dropouts who are as unlikely to complete their GED as to complete high school. The large number of students enrolled in GED programs (over 400 in a district of 50,000) showed the size of the problem – students unlikely or unwilling to be successful in the traditional high school setting. The number of GED students identified for a year in GISD was equal to an additional high school graduating class – an unacceptable percentage of whom did not graduate.

The GED credential does address the issue of time for students who normally would be able to complete their high school diploma if given enough time but need to complete their high school experience immediately. The GED credential, however, seems to do little to address those students who are disengaged from high school and are as unlikely to be successful in one program as another. Since the type of instruction does not seem to impact whether students stay in the program or succeed on the test, educators will not get good returns in designing new or better GED programs as a way to reduce dropouts. The GED alternative credential does serve a purpose and should continue to be

a part of what school districts offer students. However, to reduce the dropout numbers, educators must instead look toward designing programs that will keep students coming to regular school and not allow them to fall significantly behind in credits and GPA.

The GED will serve the student who does not fit the traditional high school pattern but has higher than average achievement or IQ scores. It will also serve students who are becoming parents or need to work and complete high school in a hurry if they were likely to succeed in regular school. However, it seems unlikely to help those students who are unable to perform satisfactorily in regular school – passing classes and passing TAAS. GED instruction does keep students attending school and involved in education and move them toward a possible alternative credential. The GED credential is part of the answer to the dropout problem, but it is not a complete answer. School reform programs need to consider formatting alternative schools or programs for students unlikely to succeed in the regular high school environment so that such students can leave high school with measured success. If such alternatives are not offered, unsuccessful students will move along a course of failing classes and missing school until they turn 17 and begin work on a GED, or until they become “undesirable” students and are “advised” by school administrators to pursue GED instruction and move off the regular school rolls.

APPENDICES

APPENDIX A
INTERVIEW FORMS

LETTER TO STUDENTS

Dear GED Student,

My name is Marlene Gardner. Currently I am working on a doctoral degree at the University of North Texas. I also serve as assistant principal and GED teacher at Warren Alternative Education Center in the Garland Independent School District (GISD). I am doing research on the GISD GED program and am attempting to contact all students who participated in GED instruction during the 1999 – 2000 school year. I am asking for your consent to review your GISD student records and to interview you regarding your GED experience. If you consent to participate in the study, you will receive a telephone call in which I will ask for your response to the enclosed questions. The interview will last approximately 15 – 20 minutes and is the only requirement for your participation. The purpose of the research study is to identify effective GED preparation procedures and find ways to improve the current program and help GED students pass the tests. Your input will help identify why students leave regular school and enroll in the GED preparation program and what characteristics of the program seem most helpful.

All students are assigned a study number and are not identified by name; so, your responses are confidential. You are being asked for permission to transcribe your responses to the accompanying questions. All data from the interviews will be destroyed when the study is completed. There are no potential risks expected as a result of the study. The study will benefit current and future GISD GED students who participate in GED preparation programs and perhaps other GED students in similar programs.

The study will consist of interviews of GED participants, a summary of interview responses, and statistical analyses. No student is required to participate in the study and a refusal to participate involves no penalty or loss of rights or withdrawal of instruction. Any questions regarding the study design or purpose should be directed to Marlene Gardner at Warren Alternative Education Center at 972-926-2691 or Dr. Frank Kemerer, UNT faculty advisor at 940-565-4800. You may also contact the University of North Texas Institutional Review Board at 940-565-3940.

If you are willing to be interviewed, please sign and return the consent statement below. Put the signed copy in the enclosed stamped envelope. You may keep the additional copy of this letter and the consent statement for your records. Thank you in advance for your willingness to participate in this study.

Sincerely,

Marlene K. Gardner
Study Investigator

I have read the above letter regarding the GISD GED study and consent to participate in the interview and give permission for the interview to be transcribed and my student records to be reviewed.

Signature

Date

Printed Name

GISD ID#

Best day and time to call

phone number to be called

Please return this signed sheet in the enclosed envelope to:

Page 1 of 4

STUDENT COPY OF LETTER

Dear GED Student,

My name is Marlene Gardner. Currently I am working on a doctoral degree at the University of North Texas. I also serve as assistant principal and GED teacher at Warren Alternative Education Center in the Garland Independent School District (GISD). I am doing research on the GISD GED program and am attempting to contact all students who participated in GED instruction during the 1999 – 2000 school year. I am asking for your consent to review your GISD student records and to interview you regarding your GED experience. If you consent to participate in the study, you will receive a telephone call in which I will ask for your response to the enclosed questions. The interview will last approximately 15 – 20 minutes and is the only requirement for your participation. The purpose of the research study is to identify effective GED preparation procedures and find ways to improve the current program and help GED students pass the tests. Your input will help identify why students leave regular school and enroll in the GED preparation program and what characteristics of the program seem most helpful.

All students are assigned a study number and are not identified by name; so, your responses are confidential. You are being asked for permission to transcribe your responses to the accompanying questions. All data from the interviews will be destroyed when the study is completed. There are no potential risks expected as a result of the study. The study will benefit current and future GISD GED students who participate in GED preparation programs and perhaps other GED students in similar programs.

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If you are willing to be interviewed, please sign and return the consent statement below. Put the signed copy in the enclosed stamped envelope. You may keep the additional copy of this letter and the consent statement for your records. Thank you in advance for your willingness to participate in this study.

Sincerely,

Marlene K. Gardner
Study Investigator

I have read the above letter regarding the GISD GED study and consent to participate in the interview and give permission for the interview to be transcribed and my student records to be reviewed.

Signature

Date

Printed Name

GISD ID#

Best day and time to call

phone number to be called

Keep this copy for your records.

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LETTER TO PARENTS

Dear Parent of GISD GED Student,

My name is Marlene Gardner. Currently I am working on a doctoral degree at the University of North Texas. I also serve as assistant principal and GED teacher at Warren Alternative Education Center in the Garland Independent School District (GISD). I am doing research on the GISD GED program and am attempting to contact all students who participated in GED instruction during the 1999 – 2000 school year. I am asking for your student's consent to review his/her GISD student records and to interview him/her regarding the GED preparation experience. If your student consents to participate in the study, he/she will receive a telephone call in which I will ask for a response to the enclosed questions. The interview will last approximately 15 – 20 minutes and is the only requirement for participation. The purpose of the research study is to identify effective GED preparation procedures and find ways to improve the current program and help GED students pass the tests. This input will help identify why students leave regular school and enroll in the GED preparation and what characteristics of the program seem most helpful.

Your student's participation is strictly voluntary. Although students will be asked to share personal information, students will be assigned a study number and are not identified by name. All responses will be confidential. A copy of the interview questions is attached. Your student will be asked for his or her consent for participation and permission to transcribe their responses to the interview before a call is made. Information from the interviews will be used to enhance the statistical analyses made. There are no potential risks expected as a result of the study.

The study will consist of interviews of GED participants, a summary of interview responses and statistical analyses of student records. No student is required to participate in the study and a refusal to participate involves no penalty or loss of rights or withdrawal of instruction. Any questions regarding the study design or purpose should be directed to Marlene Gardner at Warren Alternative Education Center at 972-926-2691, or Dr. Frank Kemerer, UNT faculty advisor at 940-565-4800 or the University of North Texas Institutional Review Board at 940-565-3940.

Thank you for your willingness to allow your student to participate in this study; we hope to continue to improve the GED preparation programs offered by Garland Independent School District.

Sincerely,

Marlene K. Gardner
Study Investigator

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INTERVIEW QUESTIONS

1. Why did you leave regular school?
2. What kind of grades / credits did you have in high school?
3. What kind of changes or circumstances might have enabled you to stay in regular school?
4. Why are you pursuing a GED credential?
5. Where did you attend GED preparation classes?
6. What kinds of activities were most helpful to you in preparing for the GED tests?
7. Approximately how many hours did you spend preparing to take the GED tests?
8. How many hours a week do you read on your own? (choose zero if you do not read on your own)
9. Have you received your GED credential? If yes, when? If not, why not?
10. With whom do you live? How many people are in your family?
11. Do you have children of your own?
12. Do you work? What kind of job? How many hours per week?
13. What are your plans after receiving your GED credential?
14. Do you have access to a computer at home?
15. What is your level of computer ability (use a rating of 1 to 4 with 1 the least and 4 the most)?

APPENDIX B
STATISTICAL SUMMARY

STATISTICAL SUMMARY

| <u>Gender</u> | <u>Male</u> | <u>%</u> | <u>Female</u> | <u>%</u> | <u>Total</u> |
|---------------|-------------|----------|---------------|----------|--------------|
| District | 286 | 63.3 | 166 | 36.7 | 452 |
| Study Gr | 99 | 60.7 | 64 | 39.3 | 163 |
| Testers | 130 | 58.8 | 91 | 41.2 | 221 |
| Passers | 75 | 55.1 | 61 | 44.9 | 136 |

| <u>Ethnicity</u> | <u>Am In</u> | <u>%</u> | <u>Asian</u> | <u>%</u> | <u>Black</u> | <u>%</u> | <u>Hisp</u> | <u>%</u> | <u>White</u> | <u>%</u> | <u>Total</u> |
|------------------|--------------|----------|--------------|----------|--------------|----------|-------------|----------|--------------|----------|--------------|
| District | 5 | 1.1 | 14 | 3.1 | 82 | 18.1 | 134 | 29.6 | 217 | 48 | 452 |
| Study Gr | 1 | 0.6 | 2 | 1.2 | 22 | 13.5 | 58 | 35.6 | 80 | 49.1 | 163 |
| Testers | 4 | 1.8 | 10 | 4.5 | 28 | 12.7 | 44 | 19.9 | 135 | 61.1 | 221 |
| Passers | 4 | 2.9 | 3 | 2.2 | 11 | 8.1 | 25 | 18.4 | 92 | 67.6 | 135 |

| <u>Language</u> | <u>Spanish</u> | <u>%</u> | <u>Viet</u> | <u>%</u> | <u>Lao</u> | <u>%</u> | <u>Camb</u> | <u>%</u> | <u>Chin</u> | <u>%</u> | <u>English</u> | <u>%</u> |
|-----------------|----------------|----------|-------------|----------|------------|----------|-------------|----------|-------------|----------|----------------|----------|
| District | 64 | 14.2 | 6 | 1.3 | 1 | 0.2 | 2 | 0.4 | 1 | 0.2 | 377 | 83.4 |
| Study Gr | 22 | 13.5 | 0 | 0 | 1 | 0.6 | 0 | 0 | 0 | 0 | 139 | 85.3 |
| Testers | 17 | 7.7 | 4 | 1.8 | 1 | 0.5 | 1 | 0.5 | 0 | 0 | 197 | 89.1 |
| Passers | 8 | 5.9 | 1 | 0.7 | 0 | 0 | 0 | 0 | 0 | 0 | 127 | 93.4 |
| %passers | | 12.5 | | 16.7 | | 0 | | 0 | | 0 | | 33.69 |

| <u>Immigrant</u> | <u>US</u> | <u>%</u> | <u>Other</u> | <u>%</u> | <u>Total</u> |
|------------------|-----------|----------|--------------|----------|--------------|
| District | 426 | 94.3 | 26 | 5.7 | 452 |
| Study Gr | 156 | 95.8 | 7 | 4.2 | 163 |
| Testers | 214 | 96.8 | 7 | 3.2 | 221 |
| Passers | 135 | 99.3 | 1 | 0.7 | 136 |

| <u>At-Risk</u> | <u>Yes</u> | <u>%</u> | <u>No</u> | <u>%</u> | <u>Total</u> |
|----------------|------------|----------|-----------|----------|--------------|
| District | 197 | 43.6 | 255 | 56.4 | 452 |
| Study Gr | 61 | 37.1 | 102 | 62.9 | 163 |
| Testers | 81 | 37.2 | 140 | 62.8 | 221 |
| Passers | 43 | 31.6 | 93 | 68.4 | 136 |
| % pass | | 21.8 | | 36.5 | |

| <u>Economic</u> | <u>Disad</u> | <u>%</u> | <u>Not</u> | <u>%</u> | <u>Total</u> |
|-----------------|--------------|----------|------------|----------|--------------|
| District | 38 | 8.2 | 414 | 91.8 | 452 |
| Study Gr | 6 | 0.04 | 157 | 99.9 | 163 |
| Testers | 16 | 7.3 | 205 | 92.7 | 221 |
| Passers | 9 | 7.5 | 127 | 92.5 | 136 |
| %pass | | | | | |

| <u>Special</u> | <u>SpEd</u> | <u>%</u> | <u>LEP</u> | <u>%</u> | <u>Gifted</u> | <u>%</u> |
|----------------|-------------|----------|------------|----------|---------------|----------|
| District | 63 | 13.8 | 26 | 5.7 | 7 | 1.5 |
| Study Gr | 24 | 14.5 | 7 | 4.2 | 2 | 1.2 |
| Testers | 22 | 0.1 | 7 | 3.2 | 5 | 1.9 |
| Passers | 8 | 5.8 | 1 | 0.7 | 4 | 2.9 |
| %pass | | 12.7 | | 3.85 | | 57.14 |

APPENDIX C
MEANS AND CORRELATIONS
OF QUANTITATIVE DATA

ANAYLSES OF QUANTITATIVE VARIABLES

Means

| Variable | Mean | Std Deviation | Minimum | Maximum | N |
|--------------------|---------|---------------|---------|---------|-----|
| Read Exit TAAS | 62.07 | 33.45 | 4 | 97 | 228 |
| Math Exit TAAS | 60.89 | 29.94 | 19 | 92 | 235 |
| Writing Exit TAAS | 1370.57 | 437.49 | 500 | 1860 | 237 |
| CogAT Verbal | 90.68 | 15.64 | 54 | 129 | 199 |
| CogAT Quantitative | 94.46 | 13.71 | 60 | 125 | 195 |
| CogAT Nonverbal | 97.42 | 14.98 | 58 | 138 | 199 |
| Read ITBS | 7.3 | | | | |
| Math ITBS | 7.7 | | | | |
| Lang ITBS | 8.1 | | | | |

Ability and Achievement Correlation

| Variable | Correlated With | Correlation Coefficient | Significance |
|--------------|-----------------|-------------------------|--------------|
| CogAT Quant | Math ITBS | 0.7448 | 0 |
| CogAT Verbal | Read ITBS | 0.7424 | 0 |

GED Tests Correlation with Subject Area Tests

| Variable | Correlated With | Coefficient | Significance |
|-----------------|-----------------|-------------|--------------|
| Literature GED | Read TAAS | 0.2809 | 0.009 |
| Literature GED | Read ITBS | 0.6003 | 0 |
| Math GED | Math ITBS | 0.7331 | 0 |
| Math GED | Math TAAS | 0.3102 | 0.003 |
| Science GED | Sci TAAS | 0.3352 | 0.002 |
| Soc Studies GED | S S TAAS | 0.3007 | 0.005 |
| Writing GED | Write TAAS | 0.1821 | 0.09 |

High School and Middle School TAAS Correlation

| Variable | Correlated With | Coefficient | Significance |
|-------------------|-----------------|-------------|--------------|
| Reading Exit TAAS | Read M.S. | 0.4311 | 0 |
| Math Exit TAAS | Math M.S. | 0.4408 | 0 |
| Writing Exit TAAS | Write M.S. | 0.1824 | 0.03 |

GED Cumulative Score With Expected Predictors

| Variable | Correlated With | Coefficient | Significance |
|---------------|-----------------|-------------|--------------|
| GED Cum Score | CogAT NV | 0.2932 | 0.006 |
| GED Cum Score | Read ITBS | 0.4519 | 0 |
| GED Cum Score | Credits | 0.1265 | 0.11 |
| GED Cum Score | GPA | 0.2158 | 0.006 |
| GED Cum Score | Absences | -0.1494 | 0.113 |

CORRELATIONS BETWEEN SUBJECT ACHIEVEMENT TESTS
AND GED SUBJECT TESTS

Writing

| | | |
|-----------------|-------------------------|------|
| Writing GED | Pearson Correlation | .182 |
| and High School | Significance (2-tailed) | .090 |
| Writing TAAS | N | 88 |

Math

| | | |
|--------------|-------------------------|-------|
| Math GED and | Pearson Correlation | .297* |
| High School | Significance (2-tailed) | .005 |
| Math TAAS | N | 88 |

*Correlation is significant at the 0.01 level (2 tailed).

Literature / Reading

| | | |
|--------------------|-------------------------|------|
| Literature GED and | Pearson Correlation | .152 |
| High School | Significance (2-tailed) | .157 |
| Reading TAAS | N | 88 |

Science

| | | |
|-----------------------|-------------------------|-------|
| Science GED and | Pearson Correlation | .335* |
| 8 th Grade | Significance (2-tailed) | .001 |
| Science TAAS | N | 88 |

*Correlation is significant at the 0.01 level (2-tailed).

Social Studies

| | | |
|---------------------------|-------------------------|-------|
| Social Studies GED | Pearson Correlation | .301* |
| and 8 th Grade | Significance (2-tailed) | .005 |
| Social Studies TAAS | N | 88 |

*Correlation is significant at the 0.01 level (2-tailed).

APPENDIX D
REGRESSION ANALYSIS
ANOVA

MULTIPLE REGRESSION ANALYSIS OF POSSIBLE PREDICTOR VARIABLES

Coefficients^a

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|-------|------------|-----------------------------|------------|---------------------------|--------|------|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 101.680 | 38.952 | | 2.608 | .014 |
| | HSTAASR | .583 | .185 | .420 | 3.148 | .003 |
| | RITBS | .374 | .138 | .334 | 2.705 | .011 |
| | CNV | .569 | .439 | .171 | 1.295 | .204 |
| | CREDITS | -1.697 | 1.254 | -.232 | -1.353 | .185 |
| | GPA | 21.121 | 10.051 | .346 | 2.101 | .043 |
| 2 | (Constant) | -20.228 | 229.398 | | -.088 | .930 |
| | HSTAASR | .533 | .207 | .384 | 2.577 | .015 |
| | RITBS | .361 | .184 | .323 | 1.967 | .059 |
| | CNV | .801 | .552 | .241 | 1.452 | .157 |
| | CREDITS | -2.272 | 1.622 | -.311 | -1.401 | .172 |
| | GPA | 25.423 | 11.988 | .418 | 2.121 | .043 |
| | AGE | 6.990 | 11.903 | .109 | .587 | .562 |
| | ETHNICIT | -4.361 | 5.812 | -.101 | -.750 | .459 |
| | GENDER | -.819 | 12.915 | -.010 | -.063 | .950 |
| | LANGUAGE | 7.638E-02 | .225 | .053 | .339 | .737 |

Excluded Variables^b

| Model | | Beta In | t | Sig. | Partial Correlation | Collinearity Statistics |
|-------|----------|--------------------|-------|------|---------------------|-------------------------|
| | | | | | | Tolerance |
| 1 | AGE | .054 ^a | .410 | .684 | .072 | .709 |
| | ETHNICIT | -.066 ^a | -.569 | .573 | -.100 | .889 |
| | GENDER | -.022 ^a | -.174 | .863 | -.031 | .764 |
| | LANGUAGE | -.016 ^a | -.129 | .898 | -.023 | .820 |

a. Predictors in the Model: (Constant), GPA, RITBS, HSTAASR, CNV, CREDITS

b. Dependent Variable: CUMGED

Residuals Statistics^a

| | Minimum | Maximum | Mean | Std. Deviation | N |
|-----------------------------------|----------|----------|-----------|----------------|----|
| Predicted Value | 166.2158 | 308.2527 | 241.2821 | 33.5829 | 39 |
| Std. Predicted Value | -2.235 | 1.994 | .000 | 1.000 | 39 |
| Standard Error of Predicted Value | 9.3872 | 22.2918 | 14.9422 | 3.3477 | 39 |
| Adjusted Predicted Value | 142.9738 | 309.5620 | 240.5956 | 34.7044 | 39 |
| Residual | -72.6584 | 47.7842 | 2.551E-14 | 26.4012 | 39 |
| Std. Residual | -2.404 | 1.581 | .000 | .874 | 39 |
| Stud. Residual | -2.639 | 1.928 | .010 | .996 | 39 |
| Deleted Residual | -87.5471 | 71.0262 | .6864 | 34.5954 | 39 |
| Stud. Deleted Residual | -2.975 | 2.029 | -.007 | 1.049 | 39 |
| Mahal. Distance | 2.692 | 19.700 | 8.769 | 4.429 | 39 |
| Cook's Distance | .000 | .199 | .031 | .051 | 39 |
| Centered Leverage Value | .071 | .518 | .231 | .117 | 39 |

a. Dependent Variable: CUMGED

ANOVAS

ANOVA^c

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|-------|------------|----------------|----|-------------|--------|-------------------|
| 1 | Regression | 42192.408 | 5 | 8438.482 | 10.256 | .000 ^a |
| | Residual | 27151.489 | 33 | 822.772 | | |
| | Total | 69343.897 | 38 | | | |
| 2 | Regression | 42856.934 | 9 | 4761.882 | 5.214 | .000 ^b |
| | Residual | 26486.964 | 29 | 913.344 | | |
| | Total | 69343.897 | 38 | | | |

a. Predictors: (Constant), GPA, RITBS, HSTAASR, CNV, CREDITS

b. Predictors: (Constant), GPA, RITBS, HSTAASR, CNV, CREDITS, ETHNICIT, LANGUAGE, GENDER, AGE

c. Dependent Variable: CUMGED

Oneway

ANOVA

CUMGED

| | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|----------------|-----|-------------|-------|------|
| Between Groups | 83204.468 | 7 | 11886.353 | 4.176 | .000 |
| Within Groups | 540761.03 | 190 | 2846.111 | | |
| Total | 623965.50 | 197 | | | |

REFERENCES

- Allen, C.A. & Jones, E.V. (1992). GED Testing Program The First Fifty Years. Washington, DC: American Council on Education.
- American Council on Education. (1998). <http://www.acenet.edu/calec/ged/>.
- Auchter, J.C., Sireci, S.G.& Skaggs, G. (1993) The Tests of General Educational Development Technical Manual. Washington, DC: American Council on Education.
- Baldwin, J. (1990). GED Candidates: A Decade of Change. GED Profiles: Adults in Transition, 1. Washington, DC: American Council on Education.
- Baldwin, J. (1992). GED Test Performance of Adult Examinees and High School Seniors. . GED Profiles: Adults in Transition, 5. Washington, DC: American Council on Education.
- Baldwin, J. (1991). Schooling, Study, and Academic Goals: The Education of GED Candidates. GED Profiles: Adults in Transition, 2. Washington, DC: American Council on Education.
- Baldwin, J. (1991). Why Did They Drop Out? Reasons GED Candidates Give for Leaving School. GED Profiles: Adults in Transition, 4. Washington, DC: American Council on Education.
- Baldwin, J., & Spille, H. (1991). GED Candidates in the Workforce: Employed and Employable. GED Profiles: Adults in Transition, 3. Washington, DC: American Council on Education.

Baldwin, J., Kirsch, I.S., Rock, D. & Yamamoto, K. (1995). The Literacy Proficiencies of GED Examinees: Results from the GED-NALS Comparison Study. Washington, DC: American Council on Education.

Boesel, D. (1998). Educational and Labor Market Performance of GED Recipients: Executive Summary. Washington, DC: U.S. Department of Education.

GED Testing Service (1990). 1989 Statistical Report. Washington, DC: American Council on Education.

GED Testing Service (1999). Who Took the GED? 1998 Statistical Report. Washington, DC: American Council on Education.

Hayes, E. & Baldwin, J. (1993). The Gender Gap: Women and Men Who Take the GED Tests. GED Profiles: Adults in Transition, 6. Washington, DC: American Council on Education.

Kroll, B. & Baldwin, J. (1994). GED candidates: Does Age Make a Difference? GED Profiles: Adults in Transition, 7. Washington, DC: American Council on Education.

Malizio, A.G. & Whitney, D.R. (1982). Examinee and High School Senior Performance on the GED Tests: A Detailed Analysis GEDTS Research Studies, NO. 3 Washington, DC: American Council on Education.

Malizio, A.G. & Whitney, D.R. (1982). Who Takes the GED Tests? A National Survey of Spring 1980 Examinees. GEDTS Research Studies, NO. 1 Washington, DC: American Council on Education.

Musgrove, W.J. (1981). How Useful Are the Official Practice GED Tests and General Educational Performance Index for Predicting Performance on the GED Tests? American Council on Education Research Brief ,No. 3. Washington, DC: American Council on Education.

Swartz, R., Patience, W. & Whitney, D.R. (1985). Adding an Essay to the GED Writing Skills Test: Reliability and Validity Issues. GEDTS Research Studies, No. 7. Washington, DC: American Council on Education.

Swartz, R., Patience, W. & Whitney, D.R. (1985). The Relationship Between Scores on the GED Writing Skills Test and on Direct Measures of Writing. GEDTS Research Studies, No. 6. Washington, DC: American Council on Education.

Whitney, D.R., Malizio, A.G. & Patience, W.M. (1985). The Reliability and Validity of the GED Tests. American Council on Education GED Research Brief, 6. . Washington, DC: American Council on Education.